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DÉBRIDEMENT *

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Débridement, as employed surgically, has been defined as an incision of a wound made with the view of facilitating the discharge of pus. It might be more properly defined as the excision of the devitalized tissues or débris resulting from the action of any traumatizing force, with the view of preventing the development of infection.

Excision of devitalized tissue has always been practiced to some extent in traumatic surgery. It was, however, not practiced to any great extent at the beginning of the war because of the teachings of military surgeons which were based on the experiences gained in previous wars. As the result of observations made in these wars, gunshot wounds when first received were treated conservatively and active surgical interference was postponed until infection had developed.

Two factors in the recent war made necessary the return to débridement which was advised and rather extensively employed by Larrey in the Napoleonic wars. These factors were, first, the high explosives, which, when they strike, tear and devitalize large pieces of muscle and shatter bone, and second, highly virulent bacteria which were present in the soil of the country over which the contending armies fought. This soil had been intensively fertilized for years.

The tissues devitalized by the high explosives formed a culture medium for the bacteria introduced with the shell fragment or pieces of clothing. In order to prevent gas gangrene, which might necessitate amputation or cause death, or suppuration, thus prolonging disability and preventing the return of men to the firing line, it became necessary to remove this dead tissue which formed the medium of growth for these organisms and to make a new wound the borders of which were formed by healthy tissues capable of inhibiting the growth of bacteria or preventing their extension when once developed.

PRIMARY INFECTION OF WOUNDS

The amount of infection carried into a wound usually depends on the shape and character of the missile, whether it is smooth or irregular, with sharp, jagged edges. A machine-gun or rifle bullet may perforate the soft parts, causing a long wound track but carrying in no infection at all or so little that the tissues which are usually only slightly damaged by a missile of this character can take care of the bacteria which are introduced. A smooth shrapnel ball, of which relatively few were seen during the latter months of the war, may be cleaned in its passage through the superficial tissues, so that infection, if it develops, may remain superficial, while the deeper parts of the wound may remain sterile and manifest no inflammatory reaction.

The irregular pieces of high explosive, on the other hand, carry infection deep into a wound, and frequently, when they pass through clothing, carry a small piece of cloth containing virulent bacteria ahead of them. Fragments of high explosive have also a more destructive action on tissues than do either undistorted machine-gun or rifle bullets, and destroy large pieces of muscle which form a medium in which the bacteria carried in by the shell fragment or clothing rapidly develop.

PERFORATING WOUNDS OF SOFT PARTS

Perforating wounds of soft parts caused by undistorted machine-gun and rifle bullets or shrapnel should be treated conservatively. It is not necessary, in most of these cases, to even debride the skin surrounding the wound of entrance and exit. Some superficial, gutter wounds, caused by the missiles just mentioned, may be painted with iodin and dressed with dry gauze. In the majority of cases, however, gutter wounds should be excised, for excision is easily performed without any disabling consequences, and healing takes place much more rapidly.

Shell fragments, irregular, distorted, machine-gun or rifle bullets and shrapnel balls, if superficial, should be removed as early as possible. Some question often arises as to the advisability of removing bullets which are not misshapen, shrapnel balls and minute shell fragments. It should always be considered whether the damages done the tissues in the attempted removal do not outweigh the advantages of removal. A foreign body in the belly of an important muscle will usually have to be removed. A foreign body resting close to the wall of a large vessel should be removed for it may later cause pressure on the vessel wall, resulting in hemorrhage and subsequent aneurysm formation. The more irregular a foreign body, the sooner it will cause trouble and the greater it will be.

FUNCTION OF THE TRIAGE OFFICER

The triage officer has an important function to perform. He can sort those cases on which iodin and a dry dressing can be applied from those which require operation consisting of removal of the foreign body. The gravity of the lesion is not indicated by the size

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* Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the Transactions of the Section and in the author's reprints.

of the wound. A bullet may cause a perforating or a penetrating wound, the wounds being relatively large, but they will often heal without complications, whereas a small fragment of high explosive may make a small wound in the skin while the underlying tissues may be badly damaged or devitalized.

As a rule, I believe it may be said that all wounds caused by high explosive, except some gutter wounds in which the foreign body has very evidently not entered the deeper tissues, should have a roentgen-ray examination and be seen by a surgeon.

The greater number of the wounded which pass from the receiving tent to the dressing tent will be made up of those who have sustained bullet wounds involving the soft parts or superficial wounds caused by other forms of missiles which have not entered muscle tissue.

GUTTER WOUNDS

Gutter wounds caused by bullets or fragments of high explosive should be excised whenever muscle has been exposed and injured. These wounds are sometimes neglected because superficial. Gas gangrene may, however, develop in such wounds, and when this type of wound is not inspected or is neglected because apparently so insignificant, the gas gangrene may extend considerably before being discovered. Such wounds may be easily excised, and the results following excision are usually not disabling because the wound is superficial.

LOCAL ANESTHESIA IN WAR WOUNDS

It has been advised that local anesthesia be used in the excision of the smaller wounds of this type. I do not believe that local anesthesia should be used in the excision of war wounds. The excision is frequently not well done under local anesthesia, for a wide enough dissection is not made. Infiltration anesthesia may also force bacteria into deeper tissues. If a deep anesthesia is not desired in the excision of such wounds, the operation may be performed in the early stages of general anesthesia.

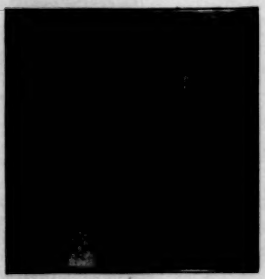

Fig. 1.—Result following débridement of high-explosive wounds of the buttocks. Removal of fragments of high explosive, also of the devitalized portion of the gluteus maximus muscle, was performed.

These gutter wounds are excised by elliptical excisions which should be made at least one quarter of an inch from the margins of the wound. The distance at which the incision should be made from the margins will naturally depend on the pathologic changes in the muscle. Muscle which is infiltrated with blood should be excised, as also should the hyaline noncontractile muscle, which is found when gas gangrene has developed. In the débridement of muscle, the excision of tissue should be carried back to muscle which contracts readily and bleeds. After one edge of the gutter wound has been freed, the incision may be made on the other side.

Care should be taken that the tissues incised are not infected from the surface of the wound, and that during excision the incision is not carried into infected tissues. In other words the excision should be en bloc. If the wounded can be kept for any length of time so that they may be observed for a few days, primary suture of wounds of this type may be attempted. In evacuation hospitals, during active work, primary suture of wounds of this character should not be attempted because of the rapid evacuation of wounded which does not permit of observation.

As previously stated, perforating bullet wounds should be treated conservatively unless there are distinct indications for surgical intervention. When there is an explosive wound of exit the tissues about it should be excised. Excision is easily performed in cases of this type for the badly injured tissues are superficial or have been exteriorized. The deep parts of such a wound may be regarded as sterile and excision should be confined to those tissues which have suffered from the explosive action of the missile.

PENETRATING BULLETS

Penetrating bullets should be removed. Bullets are usually easily removed after definite roentgen-ray localization. If removed, they will cause no trouble later. When removed after roentgen-ray localization, the incision, usually a short one, is made over the bullet and no attention is paid to the track of the missile. In some cases, however, a bullet may cause considerable damage. This happens frequently when the muscles are on a stretch when struck.

Vascular injuries, accompanied by hemorrhage and nerve injuries, may complicate either penetrating or perforating bullet wounds. One of the most typical examples of vascular injury with hemorrhage is seen in the transverse perforating wounds of the calf, in which the posterior tibial artery is injured. The leg has a tense feeling and is swollen. In cases of hemorrhage occurring in wounds of this type, the injured vessels must be ligated after the clots are removed, but as a rule no tissue will have to be excised. When there are evidences of nerve injury, the nerve in the track of the bullet should be explored. If the nerve has been divided, a nerve suture should be performed. The injured tissue of the nerve should be excised until neurofibrillae herniate from the cut end of the nerve. If suture is attempted without resection of the softened, fused nerve ends infiltrated with blood, the results will be bad because of the scar tissue which forms at the line of suture.

TREATMENT OF WOUNDS CAUSED BY SHELL FRAGMENTS

Wounds caused by fragments of high explosive, as previously stated, demand much more careful consideration than do those caused by bullets. No wound caused by high explosive should pass through the hospital without a roentgen-ray examination and careful examination by a surgeon, unless the amount of work is so great that the wounded will receive attention earlier at some hospital in the rear. It becomes necessary at times to send the wounded back to centers further removed from the front than the evacuation hospital, but when such trains are sent back there should be some assurance that the wounded will receive treatment sooner than they would at the evacuation hospital to which they are first sent, which may for a time be

unable to handle the work on account of the number of wounded that have been brought back.

PERFORATING SHELL WOUNDS

Perforating wounds may be superficial or deep. The superficial wounds often form a short tunnel, while, in other cases, the explosive force of the missile lays open the skin or lacerates the underlying muscle which is infiltrated with blood and devitalized for some distance. There is likely to be more laceration of tissue and destruction of muscle in wounds of this character than in the gutter wounds that have been described. In these perforating wounds, removal of the foreign body does not have to be considered.

In the superficial perforating wounds, the track may be excised en bloc without contamination of the surrounding tissues by passing a piece of gauze which is used as a guide through the wound. The excision is made far enough away from the tissues that have been devitalized, the gauze being used as a guide, to avoid the soiling of surrounding tissues.

The passing of gauze through a perforating wound of any kind and then making sawing motions with the gauze so inserted is bad surgical practice and should never be employed. Gauze used in this way may remove gross dirt and blood clots from a wound track, but the muscle coming in contact with the gauze is contused and any bacteria on the surface are rubbed into the deeper tissues.

It has been suggested in perforating wounds of relatively deep levels, when it is thought that the circulation of the tissues about the track is good, that the tunnel may be cleaned by passing forceps along it, and then drawing through it a suitably thick strip of gauze, which will remove the larger foreign particles and blood clot. Successive strips of gauze should then be drawn through, the sawing motion always being avoided. Finally, a strip of gauze considerably narrower than the diameter of the tunnel, and impregnated with antiseptic paraffin or petrolatum, should be pulled through and left in situ. This method of treatment of some tunnel wounds has been suggested by one of the chief advocates of the excision of war wounds. I believe it to be a dangerous procedure. Perforating wounds of the type just described, whether superficial or deep, should always be thoroughly excised or debrided. The tissue should be excised en bloc when possible. The excision will often, of necessity, be done piecemeal but should be carried into healthy tissues. Disastrous results may follow even the method of treatment just mentioned. The safest procedure should, however, be followed, although it must be confessed that gas gangrene has occasionally followed débridement. When it has followed, it has been owing to error in judgment as to the pathologic condition of the remaining muscle and not to the employment of a faulty surgical procedure or at least one of doubtful value.

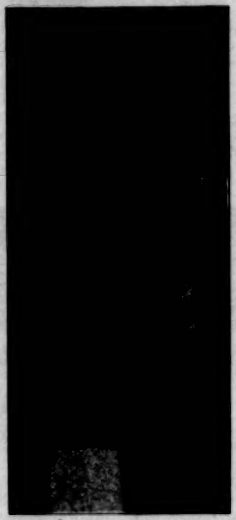

Fig. 2.—Scar following extensive débridement of muscles on outer surface of thigh.

PENETRATING SHELL WOUNDS

In this type of wounds, the foreign body must be removed. As there is no wound of exit, it may be more difficult to follow the track of the wound. Accurate roentgen-ray localization of the foreign body is necessary in all these cases for it may not be possible to follow along the track and reach the foreign body, and a counter-opening may have to be made over it in order to remove it. The distal end of the wound track may be found after the foreign body has been located, and the entire wound track may then be excised or debrided.

It is often difficult to follow the deeper parts of a wound track after the superficial portion has been excised. If the injured extremity is moved slowly, so that the deeper planes of muscles are made to assume different relative positions, the deeper parts of the track may be seen. In the relatively superficial wounds, it may be possible to insert the finger into the wound track and feel the foreign body. A probe or grooved dissector may be passed along the finger until it meets the shell fragment and may then be left in position to serve as a guide.

Special attention should be paid to the bed of the foreign body, which not infrequently carries in pieces of clothing. Cases were repeatedly seen in base hospitals in which the wound of the soft tissues which had been excised had almost entirely healed, only a small sinus remaining. Pieces of clothing were not uncommonly found in such cases. The foreign body had been removed, rather blindly perhaps, but the pieces of clothing had been allowed to remain.

In cases in which multiple shell fragments have lodged close together, the muscle will be badly damaged. I have seen cases in which several small fragments of a shell have lodged close together in the gluteal and in the hamstring muscles. Multiple small fragments when lodged close together destroy the muscle. They frequently have what may be described as a grinding or churning effect. Such wounds are very susceptible to gas gangrene.

These foreign bodies cannot be removed singly, and it would be poor surgery to attempt removal in this way if possible. The devitalized muscle in such instances should be excised en masse, the foreign bodies being removed with the muscle. In wounds of the character just described, all the hamstring muscles from their points of origin to their points of insertion may have to be removed. In injuries of the gluteal region it may be necessary to remove the greater part of the gluteal muscles. This surgery, seemingly very radical, is, however, conservative, for wounds such as those just described are especially susceptible to infections by gas producing organisms.

METHOD OF PERFORMING DÉBRIDEMENT

It is difficult to give any definite instruction regarding débridement for the reason that types of wounds

vary so much. There is as decided individuality exhibited in this kind of surgery as in that of civil practice. There are, however, certain general principles which should be followed.

Skin and subcutaneous tissues should, as a rule, not be widely debrided, for they are not usually involved in the types of infection which occur in war wounds. The resulting wounds when they can be well covered by skin are much less disabling when healing occurs. The skin in face wounds should be debrided little, for facial wounds heal rapidly. The badly soiled tissue should be removed, but no wide débridement should be attempted. All tissue, especially skin and subcutaneous tissues, should be saved in war wounds of the face when possible.

In performing débridement, an anatomic dissection should be made. The skin and subcutaneous tissues should be incised over the wound track and the tissues exposed by sharp dissection, down to tissue which is evidently devitalized. Devitalization is indicated by hemorrhagic infiltration of the muscle, and by failure to contract and bleed when pinched with tissue forceps or cut. Muscle, the seat of gas gangrene, has a peculiar waxy appearance and is rigid. It looks somewhat like muscle which has been boiled a short while. Muscle which is the seat of such changes should be entirely removed.

Considerable criticism has been raised against the transverse division of muscles during débridement. Undoubtedly, muscles have been divided transversely, but the foreign body has in many instances already caused the division. It is better to divide a muscle transversely, provided this does not interfere with its blood supply, than to leave a poorly debrided wound.

Fig. 3.—Débridement of wound on inner surface of arm and forearm. The paralysis of the ulnar nerve should be noted. Primary nerve suture was not attempted.

SMALL FOREIGN BODIES

Small foreign bodies are sometimes found with difficulty. The question arises in these cases as to how earnest an attempt should be made to remove the foreign body. An extended search should not be made for small foreign bodies because of the added injury to the muscles about the wound track which increases the dangers of infection. The track leading down to such a foreign body should be incised and provision made for drainage. Any foreign body which is left without provision for drainage is, however, a source of danger. I have seen a late infection that clinically resembled malignant edema develop about a small foreign body which had lodged in the muscle of the thigh, and had been overlooked in the roentgen-ray examination. This late infection developed four weeks after the wound was received.

Small foreign bodies in the hands and face should be left unless superficial and easily removed. They pass through no clothing when entering these parts. The danger of infection therefore is not so great, and attempts at removal would leave disabling or disfiguring scars.

Wounds of the muscles at the base of the neck, of the circumscapular group, of the buttocks, of the thigh and calf should always receive special attention. These are large muscle groups which are often ground or churned by fragments of high explosive. In cases in which there are multiple wounds, and the condition of the patient is such that all cannot be debrided thoroughly, the groups just mentioned should be operated on and the work done thoroughly because they are so prone to gas gangrene.

The operation of débridement has gained a bad repute because of some of the extensive operations that have been performed, but in some of these injuries it is necessary to remove the greater part of the gluteal muscles or all of the hamstring muscles because they are destroyed. Radical débridement in such cases hastens convalescence, for these muscles would slough away if allowed to remain, as infection would certainly occur. A radical operation is the surest preventive of gas gangrene.

The blood supply of muscles should be carefully studied. A portion of a muscle deprived of its blood supply should not be left. The most typical examples are the rectus femoris and the superficial muscles of the calf. If the rectus femoris has been divided transversely, the distal part, deprived of its blood supply, should be removed.

In transverse perforating wounds of the calf associated with division of the posterior tibial artery, I believe that it is good practice to remove all of the superficial group of muscles, because the blood supply to these muscles is either destroyed by the foreign body or interfered with when a conical débridement is done. Removal of the entire group reduces the muscle mass which requires a collateral circulation, and prevents the development of gas gangrene in the part of the muscle distal to its blood supply.

After débridement, a dressing should be applied over the surface of the wound. Gauze should never be packed into a wound but merely laid on the surface. Dry gauze or moist gauze, which soon becomes dry, is removed with difficulty from these wounds. Removal usually causes severe pain and injures the granulating surface. Petrolatum gauze or gauze impregnated with antiseptic paraffin is the best for this purpose.

When débridement of soft tissues is attempted, it should be radical, but performed with a thorough knowledge of anatomy. A clean dissection with a sharp knife should be made, the tissues should be handled gently, and the tissues adjacent to the wound should be protected from infection. The principles of surgery observed in civil life should be conscientiously followed in débridement.

REMOVAL OF BONE FRAGMENTS

Opinions differ as to the extent to which bone fragments should be removed in cases of compound, comminuted fractures caused by missiles. The line of treatment to be pursued depends again on the character of the missile. Many fractures of the long bones caused by bullets will heal if iodin is painted over the wounds of exit and entrance, and a dry dressing is applied. This statement applies to perforating wounds in which the wounds of exit and entrance are small.

In cases in which fragments of bone have been driven through the skin and a large wound of exit has been produced by a distorted missile or bone fragment, the soft tissues must be excised and the detached particles of bone removed. From experience gained after the observation of fractures in evacuation, base and general hospitals, it seems to me that fragments of high explosive have a much more destructive action on bone than bullets. The action of the traumatizing force probably does not differ, however, but a high explosive wound is more frequently infected. The more extensive and more common necrosis of bone fragments after high explosive wounds is probably due to the infection which practically always follows rather than to any differences in the traumatizing force. Bullets should be removed if they lodge in the part involved after fracture of the bone. Bullets which lodge in the tissues and do not perforate are usually traveling at a low velocity and are much more apt to carry in infection than perforating bullets traveling at high velocity.

The question as to whether amputation should be performed or not is easily determined in most cases. Injury of the principal artery of the extremity or nerve injuries with loss of great lengths of the main nerve or even localized gangrene in the distal part of the extremity, after ligature of either the main artery or vein, are indications for amputation.

As to the extent to which bone fragments should be removed, opinions differ considerably. Colonel Burghard states in his preface to the English translation of the "Traitement des Fractures" by Prof. R. Leriche:

> Put concisely, the position is, that one school regards as its bugbear possible want of union as the result of removal of fragments from an infected fracture, while the other attaches prime importance to the persistent suppuration and loss of function to which the retention of septic fragments is likely to lead.

From the cases of osteomyelitis that I have observed in U. S. General Hospital No. 28, of which we have over 400, I am convinced that an insufficient débridement results in long convalescence and considerable disability due to sclerosis of the muscles adjacent to the suppurative osteomyelitis. It is difficult in compound fractures of this type to determine how much to excise.

There should be no hesitation about removing fragments that are driven into the medullary cavity, for these must be removed in order to secure drainage of the marrow cavity, nor those which have been driven into the soft tissues, for these will no longer take any part in the regeneration of bone. In some cases which I have seen there have been a large number of sequestrums. Phemister recently removed twenty-three small sequestrums from an infected high-explosive fracture of the left humerus. There is no chemical method of sterilizing these fragments, and osteomyelitis, accompanied by infiltration of surrounding muscles and the danger of repeated pathologic fracture, cannot be obviated unless these fragments are removed.

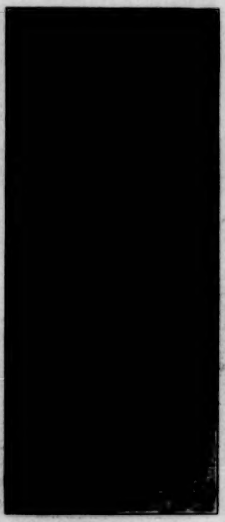

Fig. 4.—Result after débridement of extensive wound of right thigh. There is paresis of extensor muscles due to injury of anterior crural nerve.

It seems to me, in the light of experiences that I have recently had, that fractures were not sufficiently débrided. In many cases it would have been better to have performed some modified type of subperiosteal resection at the site of the fracture, removing in this way all completely detached fragments, and even in some cases those fragments concerning which there was some uncertainty as to whether they were attached or not. This statement applies especially to fractures of the femur, for the femur has apparently greater callus-producing power than either the tibia or humerus.

Hurley and Weedon state that nonunion in cases of compound fracture of the femur in men of military age is extremely rare, being not more than 1 per cent., and that even when the fractured ends of the femur have been separated as much as 3 inches, firm union has resulted.

Removal of the foreign body may be difficult in many of these cases because in palpating the tissues it may be practically impossible to differentiate the foreign body from the bone fragments. In fractures of the thigh, it is often advisable to incise longitudinally the fascia lata in order to relieve tension. This practice may be employed to advantage in other parts where there is a strong surrounding fascia.

TROUBLESOME INFECTED FRACTURES

A type of infected fracture which has caused trouble is the one with tunnels and large cavities. Many of these are caused by perforating foreign bodies, while in others the mechanism of production is difficult to determine. This type of fracture, when infected, continues to discharge until one of the walls has been removed, and the soft tissues are allowed to come in contact with the tunnel or cavity.

In debriding fractures, it would in most instances be impossible to determine whether or not a tunnel or cavity would form. If there were apparently the chance of such a formation, it would be advisable to remove the wall which was most detached or apparently most devitalized. This procedure would shorten convalescence and lessen the disability associated with this type of infected compound fracture, which is often long.

In fractures involving joints, considerable judgment must be exercised in determining the type of operation to be performed. Gunshot fractures of the upper end of the humerus and about the elbow often demand excision. In fractures of this type involving the head of the humerus typical excision of the head of the humerus should be performed. In fractures involving the elbow joint, atypical excision should be performed. Soiled muscle and synovial membrane and detached bone should be removed.

In T fractures of the lower end of the femur, it may be difficult to decide on the type of operation. T frac-

tures in which metallic fragments have been scattered along the vertical part of the T may require amputation. In cases in which a condyle is detached, it is a question whether resection followed by a stiff knee would not be preferable to a knee in which a part or all of one condyle had been removed resulting in a more or less flail joint.

Badly comminuted fractures of the patella are not uncommon in war surgery. Entire removal of a badly comminuted patella becomes a necessity. This subject must be considered in its relation to wounds of the knee-joint. Excision of such a patella should be carefully performed, and great pains should be taken to avoid injury of the knee-joint. In some cases, where there is difficulty in repairing the defect after removal of the patella, the ligamentum patellae may be split longitudinally and each half sutured to the corresponding expansion of the quadriceps femoris tendon in which the patella was embedded. When the patella is removed, there is usually a small area directly in front of the knee-joint that cannot be covered by the capsule of the joint. An attempt should always be made to cover this defect with surrounding tissue, and usually it can be done. Mobilizing the suprapatellar bursa and displacing it downward is a good method of accomplishing this.

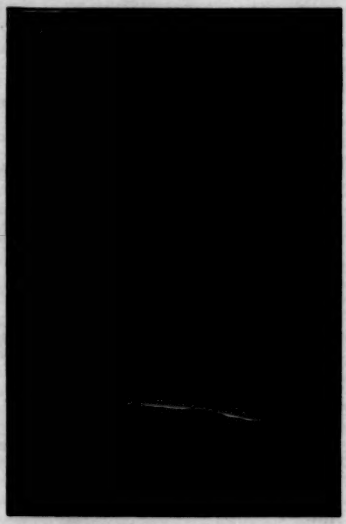

Fig. 13.—Gunshot wound of the elbow, necessitating resection of the upper end of the radius and the ulna. The motions of the joint are good. The function of the joint is so good that the patient is able to do considerable work.

WOUNDS OF JOINTS

The results following wounds of joints were bad during the earlier periods of the war. It has been stated that at a joint meeting of French and British surgeons, held near the end of the first six months of the war, it was painful to hear from representatives of both nationalities the reiteration of the deplorable results in these cases: amputation—death. Over the record of a healed stiff joint one felt almost inclined to cheer, while a story of movement following operation sounded like a fairy tale. The results were particularly bad after penetrating wounds of the knee-joint. Later it was demonstrated that the principle of débridement could be applied successfully to joints. In attempting to attain the ideal—removal of the foreign body and excision of the wound track, followed by closure of the joint cavity with preservation of joint function, imperfect results may often follow. If infection occurs after such an operation nothing has been lost.

Wounds of the knee-joint are more common than those of any other joints, and the results are, as a rule, more disastrous when infection occurs.

The principles to be outlined in the treatment of wounds of the knee-joint may be applied to wounds of any other joint and therefore only wounds of the knee-joint will be considered. The principles to be followed depend on whether the wound has been caused by a bullet or by a fragment of high explosive, and on whether the foreign body passed through the joint or lodged within it. The procedure to be followed will depend also on the amount of damage to the bones entering into the formation of the joint.

A bullet may pass superficial to the synovial membrane but may contuse it enough to cause hemorrhage into the joint. Perforating wounds which pass through the synovial membrane may produce a similar picture. In wounds of this type, as well as in wounds caused by bullets which perforate the bone, conservative treatment should be followed. Iodin should be applied to the wounds of entrance and exit and a dry dressing applied. The joint should be aspirated, for the removal of blood is indicated to lessen pain. The reduction of tension will also lessen the chances of infection. When the bullet lodges between the articular surface or penetrates the bone after passing through the joint cavity, it should be removed.

Wounds caused by high explosive must be treated early and the treatment should be radical. Accurate roentgen-ray localization is absolutely essential to success. Three, four or more pieces of high explosive may enter the joint. Pieces of clothing are usually carried in by the fragments. Not infrequently these pieces enter the joint cavity without injuring the articular cartilage or bone. Just as careful technic should be employed in these cases as in operations performed on the knee-joint in civil life. The tissues should be carefully protected and the wound track removed en masse. If the foreign body is in the tissues it should be removed with the tissues. Gutter wounds of the condyles of the femur should be chiseled away, so that, when the operation is completed, no wound track which has been infected by foreign bodies remains. A bloodless field, obtained by constriction, facilitates this operation, as Speed has shown, and may render differentiation of the wound tract clearer. Instruments coming in contact with soiled tissue should be put aside. Gloves and linen about the field of operation should be changed when necessary.

After the operation has been completed, ether may be poured into the joint before closure. I am not convinced, however, that ether has any influence in the prevention of infection in these cases. Closure of synovial membrane and superficial tissues is the next step in the operation. Such wounds, unless there is very evident infection, without much possibility of control, should always be closed. The capsule should be closed and the skin wound left open in those cases in which the tissues have been much soiled. If the

débridement has been thoroughly done and the subcutaneous tissues are not much soiled, the skin, also, may be closed. Interrupted sutures placed at wide enough intervals to permit of the escape of wound secretion should be employed in cases of this kind.

After débridement of a joint, evacuation of the patient should be postponed until one is reasonably certain of the outcome. If infection develops, in transit, the patient cannot receive the care which an infection of a joint demands and by the time the base hospital is reached, where such care can be given, irreparable damage to the joint may occur. A certain number of beds should be reserved in an evacuation hospital for patients with joint wounds, pending decision as to the result of the operation.

During transport, fixation of the joint is a sine qua non of success even in the simplest cases. This fixation is easily secured by a Thomas splint. No extension is necessary and the adhesive tape is applied merely with the intention of fixing the splint in position.

Experience with a few cases of primary suture indicates the advisability of attempting to suture nerves at the evacuation hospital. We have at the present time nine cases of primary nerve suture at U. S. General Hospital No. 28 at Fort Sheridan. Seven of these patients are well on the way to recovery or have completely recovered motion. Reconstructive surgery, especially of the peripheral nerves, should begin earlier and in more advanced units than has been the case.

While discussing débridement, I would like to emphasize the necessity of removing the nerve tissue which is softened and infiltrated with blood after a nerve is severed by a missile. The several nerves that I operated on in evacuation hospitals appeared as if fused, and in order to secure healthy neurofibrillae, which should always be exposed when a nerve suture is done, it was necessary to resect the softened, devitalized tissue on each side of the point of division.

Primary suture will not always be successful, but there will be enough successes, as shown by the number of recoveries that have already occurred, to justify it. If there is no return of function, nothing has been lost, for the secondary operation can always be done.

In the cases in which I have performed primary nerve suture, it was necessary to resect so much of the nerve ends that it was impossible to make an end-to-end suture, unless the parts were placed in proper position. In cases of suture of the sciatic nerve it has been necessary to flex the knee to 65 or 70 degrees. When the parts have been placed in such a position to permit of end-to-end union, the fixation dressing should not be removed before four weeks and then the normal position should be assumed gradually.

One would suppose that the final results of débridement would be very disabling. I have been surprised to see how little disability results, even after extensive débridement of rather large muscle groups. The most marked disability has resulted from the division of tendons, a practice which should be discouraged, for it is unnecessary. Synergistic groups of muscles are, to a greater or less extent, able to take over the action of muscles which have been partially or almost totally removed, and to perform the function so well that little disability results.

Débridement, employed so extensively in war surgery, is a procedure which could be used to advantage more commonly and more extensively in the traumatic surgery of civil life.

WAR WOUNDS

PRIMARY AND SECONDARY SUTURE*

EUGENE H. POOL, M.D.
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There are two conditions under which war surgery is performed at the front: first, relatively quiet periods; and second, times when military activities are acute. In quiet times, a thin but fairly continuous stream of wounded are passed back to the forward hospitals; but only occasionally, as after a raid, does congestion occur. The wounded usually can be operated on almost as soon as they are received; there need be no hurry, and the patients can be carefully watched after operation. The aggregate of such cases along a wide sector in quiet periods reaches formidable figures.

The ultimate aim of treatment is to restore the soldier to full activity, with complete restoration of function, in as short a time as possible. Obviously, one of the conditions of such restoration is the repair of the wound. During quiet times, early closure of the wound may be undertaken successfully in a large proportion of cases. Great benefit thereby accrues both to the patient and to the service. But the long, relatively tranquil periods also are of use in affording an opportunity for study and demonstration as to what may be done and what should be done under the varying conditions of war surgery. As a result of such study of technical methods and tissue repair, rules may be formulated and safely enforced for the treatment of the wounded during periods of greater activity.

It must be recognized, therefore, that local conditions, such as the degree of battle activity, alter materially the indications for suture, particularly for primary suture, in the advanced area.

With these preliminary remarks I will outline the general principles and technic of the three varieties of suture of war wounds, namely, primary suture, delayed primary suture and secondary suture.

We will consider first, wounds of the soft parts. The immediate aim of treatment is the prevention or limitation of infection. This is accomplished primarily by débridement of the tissues, that is, excision of the tract, removing devitalized and contaminated skin, subcutaneous tissue, aponeurosis and muscle, together with shell fragment (or other projectile), clothing and micro-organisms contained within the tract. However skeptical one may be as to the complete removal of devitalized tissues and pathogenic micro-organisms by this procedure, many of the wounds, after such an operation, undergo repair as if aseptic, and cultures and smears are often sterile.

PRIMARY SUTURE

The débridement[1] having been completed, the choice of treatment lies between primary suture and leaving the wound open. If ideal conditions, that is, early and thorough débridement, have been approximated and the case can be watched for some days, primary suture may be made. Otherwise, the wound is left open and sutured subsequently. Obviously, the deci-

* Read before the Section on Surgery, General and Abdominal, at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Débridement is here used to include incision, excision of devitalized tissues, and removal of foreign body.

sion in a given case, as to whether primary suture may be made, must be attended with much uncertainty; a mistake may be costly to the patient. In active periods, as in an offensive, when there is a large number of wounded, the exigencies of a service demand haste in the primary operation, and the patient must be evacuated, passing from the operator's control soon after the operation. Under these conditions, primary suture should not be considered. It may be employed, therefore, only in quiet periods and in hospitals where patients may be retained for observation.

The advantages of primary suture are obvious; the disadvantages consist chiefly in the danger of closing within a wound, especially within a wound imperfectly debrided, noxious micro-organisms, particularly anaerobes of the types which produce gas gangrene. A resulting gas bacillus infection or a pyogenic infection in a few cases will counterbalance many successful closures. The only means of rendering primary suture safe is by extreme operative care and thoroughness, thoughtfulness and judgment in the selection of cases and, finally, scrupulous watchfulness for some days after the operation.

When the general conditions are such as to warrant primary suture, many considerations must be weighed in each case in deciding whether suture is indicated. These considerations are:

1. The interval between the receipt of wound and the operation, the type of tissue and situation of the wound. Thus, wounds involving the muscles of the calf, thigh or gluteal regions should not be closed as a rule after a longer interval than eight hours. In these muscular parts, gas bacillus infection is prone to occur and to result disastrously. In other muscular parts the time often may be extended to about twelve hours. In wounds not involving muscles the time may be further extended. It must be understood, however, that such rules based on the time between the injury and the operation are not absolute and have been advanced only as a suggestive working basis. Wounds of the face and scalp are regularly sutured. Wounds of the hands should, as a rule, be sutured. Extensive wounds of the feet should, as a rule, be left open, treated by the Carrel method, and closed subsequently.

2. Extensive laceration of the soft parts or the presence of a large shell fragment or considerable clothing in the tissues shortens the time within which primary suture may safely be made.

3. Conditions which demand haste in the operation, and therefore militate against thorough and painstaking débridement, preclude primary suture; for instance, multiple wounds, condition of shock or period of a rush.

4. Diminution of the vitality of the parts, especially as a result of vascular lesions, precludes closure; for instance, wounds of the calf with the posterior tibial artery sectioned, or marked infiltration of the tissues with blood.

5. As has been emphasized, primary suture must not be made unless the patient can be watched carefully for days thereafter. Accordingly, it was a general rule in the American Expeditionary Forces that during active periods no primary suture of wounds of the soft parts should be made except in wounds of the scalp, face, hands, as enumerated above.

Technic of Primary Suture.—Thorough débridement is essential, and aseptic technic must be observed throughout the operation. Hemostasis must be complete. The wounds should be washed sufficiently to remove blood clots and loose fragments of tissue. Many operators, after drying the wound, apply ether to the wound surfaces; this, however, is empiric. Lemaitre applies tincture of iodin to fix residual micro-organisms. It is questionable, however, whether the ether or the iodin are factors of importance. The muscles and aponeurosis are approximated with interrupted catgut. As little and as fine catgut should be introduced as will approximate the tissues and obliterate dead spaces. The skin and subcutaneous tissues are closed with interrupted silkworm gut. A drain is rarely needed, but should be employed if there is likelihood of oozing. It should be removed as soon as possible; in general, within twenty-four hours. Silkworm strands, rubber tissue or split tube should be employed according to the indications. In some cases, especially in deep wounds of muscular parts, a few strands of silkworm are advantageous as a means of obtaining subsequently a culture from the interior of the wound. At the first dressing the silkworm should be removed and cultures taken; and if hemolytic cocci are found the wound should be reopened (Gross). After the dressing has been applied, the part should be immobilized.

Partial primary suture of wounds of the soft parts has nothing to recommend it; it is often harmful; it should, therefore, rarely be employed.

A wound which has been closed by primary suture should be examined within twenty-four hours; moreover, the general condition of the patient should be carefully watched. These precautions cannot be too strongly urged. If they are observed, there is not much danger of fatal infection; if they are neglected, avoidable fatalities will occur. It is, in general, the failure to recognize the development of gas bacillus infection or pyogenic infection as early as one should, and the unwillingness to admit failure of the primary suture with complete reopening of the wound and free excision of gangrenous muscle, that cause the fatalities.

When gas bacillus infection develops after primary suture, its onset is usually suggested by local tenderness or spontaneous pain in the wound after twelve hours, or by changes in the general condition of the patient which should be watched for and immediately recognized. These changes can be noted, as a rule, in about eighteen to twenty-four hours after the operation. They are rapid pulse, peculiar gray appearance of the face, and moderate rise of temperature, for instance, to 101. The condition, if left, rapidly becomes worse, and six hours later the systemic symptoms are often greatly accentuated. The patient becomes profoundly toxic, with high temperature, delirium and dyspnea. Locally, in typical cases, the part is swollen, tender, tense, and often bronzed in patches; the surface, however, may look and feel normal. A tympanitic note on finger percussion, as emphasized by Lemaitre, can often be demonstrated. Crepitation is frequently present. On opening the wound, or perhaps not until the aponeurosis has been opened, bubbles of gas and thin, brownish fluid exude; the typical rotten meat smell is noted, and the involved muscle shows the characteristic appearance and lack of vitality, notably, an unhealthy salmon color, friability and failure to contract on pinching. Cultures in these cases show various anaerobes, especially *B. welchii* (*perfringens*),

often associated with pyogenic organisms. Tissier believes that the association of anaerobes and streptococci is necessary for the development of gas bacillus infection. Other bacteriologists, however, question this.

Lemaitre presents the following results of primary suture:

1. Wounds of the soft parts of medium importance, seventy-one, with three total failures and eight partial failures.

2. Wounds of the soft parts of greater importance, 106, with twelve complete failures and nineteen partial failures.

3. Wounds of the soft parts with injury to a large nerve trunk, thirty-four, with no complete failures and four partial failures. By complete failure he means necessity for removing all stitches; by partial failure, superficial infection necessitating removal of a few stitches.

In ninety-nine cases of primary sutures of wounds of the soft parts made by my team at Evacuation Hospital No. 1, there were ninety-three successes and six failures. This was approximately the percentage obtained by the other teams.

DELAYED PRIMARY AND SECONDARY SUTURE

Let us now consider those wounds which are not closed by primary suture.

Dressing for Wounds Left Open After Primary Operation.—After débridement the wound is dressed. The following routine has proved satisfactory:

1. In cases in which the patient is to be evacuated, petrolatum gauze or other brand nonadhering gauze is placed along the edges of the wound so as to cover the skin edges and subcutaneous tissues. This keeps the dressing from adhering and lessens hemorrhage and pain on its removal. Gauze soaked in surgical solution of chlorinated soda (Dakin's solution) is placed very loosely in the wound. It should be so adjusted as not to cork the wound so that excretions are retained.

2. Cases which are to be retained may be dressed as described above, or the Carrel-Dakin treatment may be begun at once in selected cases.

Indications for the Use of the Carrel-Dakin Treatment.—1. If a wound is likely to be susceptible of delayed primary suture, it does not need chemical disinfection, and the Carrel-Dakin treatment is not used.

2. If a wound is not likely to be susceptible of delayed primary suture, in other words, if it must be left open for a considerable time, for instance, a week or more, infection will probably result. The use of Carrel-Dakin treatment will prevent or limit infection. Its employment in such cases is advisable.

3. When infection has occurred, the Carrel-Dakin treatment will do much to control and terminate it. The treatment under these conditions is essential.

Delayed Primary Suture.—The distinction between delayed primary suture and secondary suture is one of tissue repair rather than of time. Delayed primary suture is one in which the edges can be approximated and will unite without excision of tissue. Secondary suture is one in which the epidermis has grown inward and must be excised for proper union. This is, in general, about one week. In late secondary sutures, dense granulation tissue must also be excised. The determination as to when a wound may be sutured depends on bacteriologic findings and clinical observation. It must be emphasized that the cooperation of a bacteriologist is indispensable in making a decision as to the indications for delayed primary and secondary sutures. The practical function and indisputable importance of the bacteriologist in war surgery lies in this. In the consideration as to whether a wound is suturable or not, reliance must be placed chiefly on cultures, the important feature being the determination of the presence or absence of hemolytic cocci. For this, a routine blood-agar examination is essential.

Bacterial counts are far from exact, yet they give an indication as to the degree of bacterial contamination of a wound, especially the progress from day to day, and are of value especially for one untrained in estimating clinically the indications and contraindications for suture.

From eighteen to twenty-four hours after the original operation of débridement or excision of tissues, the wound is dressed and a culture and a smear are made. A report is returned as soon as possible. If no organisms are found, suture is indicated. If hemolytic cocci are present, suture is not considered. In the absence of hemolytic cocci, if the wound is clinically suturable, the presence of a few anaerobes or other organisms (approximately one in two fields) does not contraindicate suture. A considerable number of organisms of any kind indicates the necessity for caution. Suture, in that event, should be delayed and a culture and a smear repeated at the following dressing.

Delayed primary suture is usually made within six days after the primary operation. The advantages are the practical elimination of the danger of gas bacillus infection and the marked lessening of the danger of pyogenic infection. The disadvantages are the possibility of postoperative contamination of the open wound and the subjection of the patient to a second operation, with the attending discomfort and danger of postoperative complications, such as pneumonia. These disadvantages, however, do not equalize the risk incurred by primary suture in doubtful cases.

Technic of Delayed Primary Suture: All dressings of wounds after the primary operation should be made according to the Carrel-Dakin technic. The anteoperative preparation of the wound for delayed primary suture consists in painting the skin with tincture of iodin, after thorough cleansing as in the routine dressing. Some operators also paint the wound surfaces.

The details of suture are the same as for primary suture.

Secondary Suture.—The following is the routine generally followed: After forty-eight hours, at the daily dressing, a culture and a smear are made. The first report, therefore, contains the approximate number of organisms per field and the varieties of organisms. Thereafter, a smear is made every two days. It is also advisable to make a culture occasionally. Care must be taken not to touch the skin surface in making the smear, since skin contamination vitiates the value of the report. From the smear a bacterial curve is plotted according to Carrel's plan. When the organisms in two successive counts are few, that is, approximately one per two fields, and a culture shows an absence of hemolytic cocci, the wound is considered susceptible of secondary suture, except when the wound has contained hemolytic cocci at any time. In that case careful cultures are made from granulation

tissue and from the discharge from all parts of the wound; and absence of hemolytic cocci should be established by two successive negative cultures before suture is made. It has been observed that streptococci are prone to lie dormant in small numbers, but to flare up and cause virulent infection after closure of the wound.

Technic: The preparation is the same as for delayed primary suture. Lemaitre distinguishes two varieties of secondary suture:

1. Secondary suture of the skin. The incision surrounds the new epidermis along the wound edges. A healthy normal skin edge must be present for successful suture. The skin is freed by undermining in all directions, as far as necessary, in order to approximate the edges with the minimum tension. This separation is made in the plane immediately superficial to the deep fascia. Only dense scar tissue or projections of granulation tissue are removed from the wound. The deep fascia is then approximated with interrupted catgut when possible; usually this may be done in the thigh and shoulder, but rarely in the leg, arm and forearm. The skin and subcutaneous tissues are closed with silkworm gut. Considerable tension may be allowed, far more than we are in the habit of permitting in civil practice. If little skin was removed at the original operation, the skin stretches in a short time, tension is relieved, and good union results. The result of suture is directly proportionate to the degree of tension. If there is extreme tension, infection may be expected. It is surprising, however, how well most of these wounds do, even after some infection. After the suture is completed, a dry dressing is applied with considerable pressure and left undisturbed, if conditions warrant, for about eight days, after which sutures are removed.

2. Secondary suture reconstruction. The granulation tissue and scar tissue are removed from the entire wound, and all layers are reconstructed by suture.

When two longitudinal wounds are on the same transverse plane, with considerable loss of tissue in each, one wound can usually be closed completely and the other closed in part. A dry dressing is applied, and the wounds are left for about eight days, after which the sutures are removed. The unclosed portion then presents a flat, clean granulating surface.

WOUNDS OF THE FACE

Wounds of the face must be considered independently. However severe, extensive and dirty the wound, virulent pyogenic infection or gas bacillus infection are not prone to develop. This feature makes it possible, by timely operative intervention, to avoid in most cases the gruesome mutilations which were so often allowed to occur in the early days of the war. The rule which may be followed safely is to repair wounds of the face as soon as possible after the receipt of the injury without general excision of the tissues. The wound is cleaned thoroughly, and only such tissue is removed as is definitely devitalized.

WOUNDS OTHER THAN THOSE OF THE SOFT PARTS

In regard to suture in wounds other than those of the soft parts, we must touch on suture in compound fractures and in wounds of joints. Wounds of the abdomen, thorax and skull cannot be dealt with adequately in a general review of the subject of suture, since each demands specialized consideration.

Compound Fractures Caused by Projectiles.—In compound fractures caused by projectiles, the same indications for operation must be followed as in wounds of the soft parts alone. Operation, therefore, is performed in all cases except through and through wounds by bullets, with punctate wounds of entrance and exit and little or no ecchymosis, swelling and tension of the parts. Such fractures are not markedly comminuted, and it has been found that this type usually does best without operation.

In the operation, the wounds of the soft parts must be subjected to the same primary treatment, that is, débridement, as wounds uncomplicated by fracture. The bone complication simply accentuates the importance of expedition, thoroughness and early closure. The last is especially important because it means the conversion of an open into a closed fracture.

The fracture should ordinarily be freely exposed. Small fragments which are encountered in the débridement of the soft parts, and large fragments which are completely detached, should be removed; but the temptation to remove fragments freely should be resisted. It is important that attached fragments be conserved. The bone is cleansed as well as possible, but débridement of the tract through the bone cannot be as thorough as that of the soft parts.

The subsequent treatment of the wound, after the primary operation of débridement, comes under the same general rules as apply to wounds of the soft parts alone. Primary, delayed primary or secondary suture may be made, and the Carrel-Dakin solution may be employed as in wounds without fracture. In the consideration of the closure of such wounds, it must be recognized that the laceration of soft parts is extensive in most comminuted fractures of the extremities, not only on account of the injury by the projectile, but also as the result of bone fragments scattered through the adjacent muscles. The chief danger of primary suture is the development of gas bacillus infection due to anaerobes and favored by incomplete débridement, muscles devitalized by vascular injury or the presence of foreign bodies. In the event of infection, moreover, the fracture exposes to the danger of osteomyelitis with the consequent increased danger of life, limb and function.

The development of osteomyelitis, particularly osteomyelitis of a serious grade, is favored by a closed infected wound, especially if the case is not carefully watched and the wound not immediately reopened should infection develop. Therefore, the advantages of delayed primary suture over immediate suture, and the disadvantages of primary closure when the operation must be done hurriedly or the patient must be transferred soon into other hands, are even more striking in the case of compound fractures than in wounds of the soft parts without fracture. In addition to the treatment of the wound, provision must also be made, in all these cases for reduction and immobilization of the fracture by external splinting.

Primary suture may be safely performed in some cases of compound fractures caused by projectiles, as we noted at La Panne and in our own service. The practice is dangerous, however, except rarely in early cases with little involvement of soft parts and bone. I am convinced that delayed primary suture should be aimed at in most compound fractures of the long bones under conditions in which the patient can be properly operated on and watched thereafter. It has been dem-

onstrated repeatedly that bad fractures of all the long bones except the femur may be closed in from three to six days after débridement, thus converting them into simple fractures. Moreover, this can be done with few failures and little risk. If delayed primary suture is not possible, secondary suture often may be made successfully.

The details of the dressings are the same as already described for wounds of the soft parts. If, at the primary operation, early suture seems probable, Carrel-Dakin treatment is not used, because experience has shown it to be unnecessary and probably, at times, harmful by reason of the fact that the wet dressings must be changed, which often necessitates moving the fragments which should be studiously immobilized from the outset.

It must be emphasized that early suture can be undertaken only in relatively quiet periods and in hospitals in which the patients can be kept and carefully observed.

Wounds of Joints.—The principles of treatment, in wounds of joints, are complete débridement of the tract of the projectile through the soft parts and bone; removal of foreign bodies; irrigation of the joint, first with saline solution, then by distention of the joint with ether; absolute closure of the joint by suture, with or without closure of the superficial parts according to the rules laid down for primary suture of the soft parts alone, and finally, early active motion.

An effort should be made to save the joint, provided the conservable articular surfaces and soft parts are sufficient to warrant a reasonable hope of securing a useful joint.

If an attempt is to be made to save the joint in a case in which there is such destruction of soft parts that the capsule cannot be completely closed, the defect in the capsule should be closed with muscle or fascia.

After-Treatment: If the joint becomes distended, and infection is suspected, the effusion should be aspirated immediately and a culture made. If the patient's condition, the local examination, or the character or culture of the aspirated fluid indicate pyogenic infection, lateral incisions should be made at once; or if the original incision is so placed as to allow satisfactory drainage, it should be reopened and the treatment for suppurative arthritis begun.

APPLICATION IN CIVIL SURGERY

Primary and secondary sutures have a real application in civil surgery; for instance, primary suture in compound fractures and wounds of joints, and secondary suture in various conditions, but especially for the closure of suppurating wounds which have been disinfected by the Carrel-Dakin method.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LEWIS AND POOL

DR. FREDERICK W. BAILEY, St. Louis: The question of débridement so ably covered by Dr. Lewis leaves little to be said. The chief essentials are to remove all the devitalized tissues—scientifically, not roughly. Rough dissection is perfectly proper where the anatomic structures will permit it, but in areas around the larger vessels and nerves débridement should be done just as carefully as any other surgical operation in civil life. In the general hospitals at home we are at present engaged principally in undoing a great many of the mistakes which were made on the other side. I do not doubt but that a fair number of nerve sutures, a fair percentage of them, are probably due to careless surgery during the original débridement in the field or evacuation hospital. I think all of us could point to instances where carelessness in débridement caused the loss of a limb through the destruction of the arterial supply. The place where we should begin our reconstruction work is at the front. It would make it easier for the general hospitals and base hospitals after the work has been finished.

Débridement of the bone has been sadly neglected. Many of the cases which are now causing a great deal of trouble and which will be on our hands for an indefinite time could have been prevented had the bone been debrided at the original operation. They have set up an osteomyelitis which extended and made subsequent operation more difficult than if it had been attended to properly at the time of the first treatment. As regards primary suture, I cannot give you any information in that line. The work at the advanced station, in my opinion, does not justify primary suture by the surgeons who are available in these places. Very seldom, especially in times of stress during great activity, were we able to see our patient more than once in three days. Often the patient was whisked away in a few hours. Primary suture should not be attempted unless the surgeon who attempts it can watch the patient for an indefinite number of days. As to the exposure of these cases in regard to débridement: In cancer an exposure is necessary, especially when the tumor is situated in the deeper tissues and nerves. We hope we shall never again have to do this type of work, but if we do, we should have capable surgeons at the front, men who will eliminate much of the suffering and loss of life at the front and shorten the reconstruction work in which we are now engaged.

DR. FENTON B. TURCK, New York: As Dr. Murphy's assistant I carried out some investigations on the cause of death without infection. I found that injecting peptones caused death of the animal in three minutes. I published this work in 1897 and called it "The Toxines of Shock." In 1903 we obtained the same material from the abdominal cavity and walls of the intestines and it produced immediate death from shock. In 1912 I introduced muscle tissue from autolysed tissue. We found germs growing in the wounds that produced the reactions in the lung and in the upper alimentary tract. We made antigen, injected it into animals and prevented the death of the animals which is due not to wounds but to autolyzation. I want the surgeons to understand that autolysis is the real cause of death and not the toxines or germs. Dog's tissue will not kill cats, but dog's tissue will kill dogs and cat's tissue will kill cats. It is a species of reaction.

DR. DONALD MACRAE, JR., Council Bluffs, Iowa: I sometimes fear that men may get an impression that débridement means cutting out the entire wound, similar to removal of a carcinoma, and I have seen this done on numerous occasions. This is not the idea of débridement. The idea is not to take out tissue en masse, unless the tissue is dead. It is not necessary to gouge out the muscle and hunt for vitalized tissue, which may be very close to the surface.

It was my privilege to be on the Château Thierry front when we did not have teams, with 1,200 and 1,300 wounded lying on the ground and no one to take care of them. The average men coming up, good and bad surgeons of the United States, knew very little about débridement and yet it was known by the British and French. Why didn't we know it? So it seems to me in talking of preparedness and getting ahead of the game in our profession, and of gas gangrene, that we would have gotten ahead of the game if we could have known about débridement before and been able to do débridement immediately on our arrival on the field.

DR. W. M. THOMPSON, Chicago: I would like to add my testimony to the remarks of the previous speaker. After a continued sojourn in France, working with three armies, I think I have had almost as much experience as any American in débridement. We have had some splendid papers on the subject, but even after reading these papers

and reading all the literature on this subject no man is competent to do débridement correctly. It must be seen; you must live it; you must live in the atmosphere of it. Our surgeons made mistakes in France not because they were incompetent, but because they were not given the opportunity to see these things and learn about them first hand.

DR. KELLOGG SPEED, Chicago: This is the time to get primary impressions. I do not like what Dr. Macrae said about Château Thierry and the surgeons—good, bad and indifferent—that were there. The articles I have written on war surgery were put out with considerable effort, with a great deal of pleasure, with hopes that men would use them and profit by them. I had had experience before we entered the war, and I was with one of the first units that touched France in 1917. I arrived in connection with the MacRae outfit, June 5, 1918. I knew about débridement. I had done hundreds of such operations. There were a few other men there who knew about débridement. There was in these organizations—not citing Colonel MacRae's as one—a lack of seasoned men such as there were to be had in France. There were scattered through the English forces and through the French, men who did know these things and who wanted an opportunity to go ahead and practice what they knew, but a large percentage of them never had a chance to do it and when they were sent over, as I was, they were put in entirely subsidiary places that did not count.

DR. DEAN D. LEWIS, Chicago: The strange thing about this subject is that patients with the devitalized muscles have the least shock. The shock cases are those of gunshot wound through the knees, the cases in which the legs are practically shot off. With all this theory of peptones in the production of shock, and I do not care how long this has been in circulation, certain clinical factors demonstrate that you can have all the contused muscle you want until gas gangrene develops and the patient does not suffer from shock. Another thing about débridement's not being known by American surgeons: They understood the principles of it. The only way you can learn to do it is to do it. If we ever have another war I hope the evacuation hospital is made the center for instruction for surgeons who are going to practice surgery. They should be there as observers and train younger men. You could not learn débridement in Fort Riley or Camp Greenleaf, but you can learn the principles, that is, a thorough knowledge of anatomy. If a man has a thorough knowledge of anatomy, with good sense and judgment, he will learn how to do débridement. The thing that impressed me in our American Expeditionary Force was that we have been developing physiologic surgeons. The war demanded that we have anatomic surgeons, but they were few.

New York Indians a Health Problem.—The April number of the *Monthly Bulletin* of the New York State Department of Health is entitled the "Indian Conference Number." It describes the health problems in connection with the Indian population of this state. The state health department has also issued a special bulletin on this subject. New York state has an Indian population of more than 5,000; these Indians come in close contact with a million or more white citizens in the neighborhood of the reservations. A bill has recently been signed by the governor providing for a state commission to confer with the Indian committees of the two houses of Congress in an effort to better the situation. The Indian has adopted the white man's way of living in houses, but does not pay the same attention to light, ventilation and other sanitary factors. Consequently he falls an easy victim to tuberculosis and is prone to acquire other communicable diseases and to spread them among his white neighbors. The department has recently made a sanitary survey of the Onondaga Reservation. The results show the need of teaching the Indian sanitation and personal hygiene. The survey will be extended to other reservations in the state as a preliminary step to the development of a comprehensive system of instruction in sanitation. At present the Indians are under the charge of the national government.

TRENDELENBURG ANESTHESIA IN SURGERY OF THE PELVIS*

DONALD GUTHRIE, M.D.
SAYRE, PA.

I am convinced that the Trendelenburg[1] method of anesthetizing plays an important rôle in the prevention of postoperative ileus and shock, and therefore believe it worthy of consideration by this section.

Fig. 1.—Patient's legs strapped to foot of table by a broad surcingle.

It is a well known fact that trauma to the small intestine is one of the direct causes of postoperative shock and ileus. An experienced surgeon can often predict just which patient is going to have a stormy convalescence by the amount of trauma the small intestine has, of necessity, been subjected to during the operation; for trauma to the small intestine differs very much in its harmful effects from trauma to the other intra-abdominal organs. Indeed, some of the

Fig. 2.—Anesthesia begun with patient in high Trendelenburg position.

most comfortable patients we see after operation are those who have had resections of the large intestine, or extensive operations on the stomach, and some of the sickest are those with the quiet distended abdomens, regurgitation, restlessness and fast pulse-symptoms hard to differentiate from a beginning peritonitis

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventieth Annual Session of the American Medical Association, Atlantic City, June, 1919.

1. Guthrie, Donald: Factors of Safety in Abdominal Hysterectomy, Am. J. Surg. 33:49 (April) 1919.

or a mechanical obstruction of the bowels, and which are the result of extensive trauma to the small intestine by the use of packs, made necessary to get exposure of the operative field.

Briefly, the object of the method is to rid the pelvis of as much of the small intestine as possible before the abdomen is opened for an operation in the pelvis. It is best employed for ether anesthesia, although I have used it with a fair degree of success during gas-oxygen anesthesia. The anesthesia is started with the patient in the high Trendelenburg position (Figs. 1 and 2) on the operating table. It is not necessary to have patients who object come into the operating room to be anesthetized, although with the proper kind of anesthetizers very few patients will object. If the anesthetic is given in an anesthetizing room, the patient is put on the table which is to be used during the operation, and the anesthesia is started with the patient in the high Trendelenburg position. The method cannot be employed successfully except by a skilled anesthetist, one who is well trained in suggestion and who can quiet the most apprehensive patient and quickly allay her fears, for the objections to the method are that it may frighten the patient and that the position may be uncomfortable.

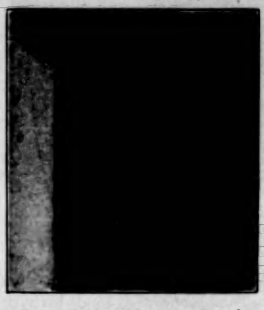

Fig. 3.—Lifting abdominal wall to free pelvis of any coil of small intestine.

It has been asked why it is not possible to begin the anesthesia in the dorsal position and change to the Trendelenburg position as the patient is getting under the anesthetic, or to wait until the patient is fully anesthetized and then change to the Trendelenburg position before making the incision. I have tried both these methods, and in my hands they do not work with the same success as the method I am advocating. To change the patient's position as she is getting under the influence of the anesthetic frightens her, I have found, and starts straining or coughing, either of which is fatal to the success of the method. To wait until the patient is fully anesthetized and then change her position does not give the diaphragm time enough to pull the intestine out of the pelvis.

The anesthetist, who has previously met the patient, accompanies her to the operating room, feeding her mind with well chosen suggestion. The patient steps on a stool and sits on the table, the foot part of which has been lowered. The legs are fastened to the foot of the table by a broad surcingle which is fitted snugly, but not made uncomfortably tight (Fig. 1). The patient then lies down on the table with her hands clasped and her arms folded across her chest. The arms are fastened by a gauze bandage, which is attached to the head of the table. The table is now lowered in the high Trendelenburg position and the anesthesia begun (Fig. 2). Absolute quiet is maintained in the operating room while the anesthetic is given. The patient's attention is left entirely with the anesthetist.

If the anesthetic has been given successfully and the patient has not strained or coughed while going to sleep, it is usual to find only a coil or two of small intestine in the pelvis, provided, of course, the intestine is not adherent to the pelvic structures. Through a small opening in the peritoneum, two fingers of the right hand are inserted into the cavity, and the abdominal walls are well lifted up (Fig. 3). The inrushing air will cause any coils of intestine which have not gravitated out of the pelvis to slide upward, so that it is usually necessary to employ only one small gauze square to get excellent exposure (Fig. 4).

In comparing this method with the one usually employed, that of anesthetizing the patient in the dorsal position, making the incision and then calling for the Trendelenburg position (Fig. 5), it is amazing to see the difference in the amount of gauze packing necessary to use to obtain exposure (Fig. 6).

ABSTRACT OF DISCUSSION

DR. JOHN OSBORN POLAK, New York: It is a privilege to endorse what Dr. Guthrie said of the advantages of etherization in the extreme Trendelenburg posture as suggested by him. Those of us who have seen the foreign operators have been impressed with the facility with which they operate on the pelvic organs. The two points which make operation on the pelvic organs easy are, first, proper exposure of the pelvis by posture and, second, sufficient exposure of the field by a large incision. Whether these pads be the gauze roll, or whether they be individual pads, or whether they be protected with guttapercha tissue as suggested by some, they all produce trauma. If any of you have taken the trouble to investigate the experimental use of gauze on the peritoneum of animals you will know this to be true. What Dr. Guthrie said is absolutely true, that the postoperative convalescence is dependent on the amount of trauma done to the small intestine. The usual transfer of the patient from the anesthetizing carriage to the operating table is not only an unnecessary waste of ether, for it disturbs the patient who is awakened

Fig. 4.—Exposure of pelvis, only one small square of gauze being necessary.

from her light anesthesia and we have greater difficulty in securing sufficient relaxation. Consequently the operating table should be mounted with large wheels so that the patient may be anesthetized in this position on the table for pelvic operations. There is one criticism that I would make; I do not know that I have any ground for it. Instead of flexing the legs on the thigh and maintaining the patient in position by fastening the legs to the table which we feel causes tension of the rectus muscles and require deeper anesthesia, we have been having the legs extended and the weight of the body supported by the shoulders which are held in place by well padded shoulder pieces. When the patient is in this Trendelenburg posture I do not believe this posture can be used from the beginning as satisfactorily with the combination gas oxygen as with ether. The nitrous oxid-oxygen men tell us that they have educated the surgeon to operate with tense muscles. We feel that in operating we can get the needed amount of relaxation with minimum anesthesia if the patient is not disturbed during the induction of the anesthesia and this posture is used from the beginning of the anesthesia.

Dr. Albert J. Ochsner, Chicago: As to the time at which the foot of the bed is to be elevated, I would say that it does not matter so much so long as the table is elevated several minutes before the operation is begun. Bell of Montreal directed attention to the fact that when he anesthetized patients in the moderate Trendelenburg posture they did not inspire any mucus, and consequently at that time when most surgeons had many cases of ether pneumonia he had none. Of course, the inspiration of mucus does not begin until the patient is fairly well anesthetized because the patient protects herself before that time by swallowing the mucus, so that this feature will be equally well taken care

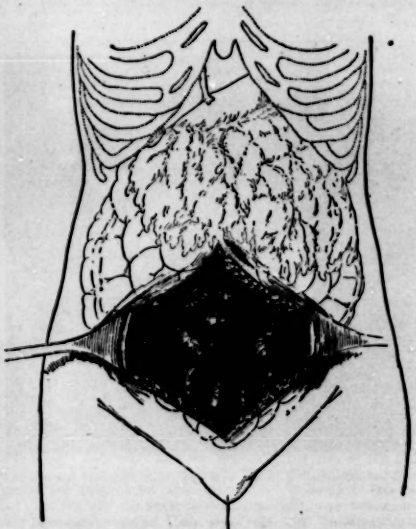

Fig. 5.—Compare difference in amount of small intestine in pelvis when patient is anesthetized in the dorsal position.

of if the patient is completely anesthetized in the horizontal position, and then before the ultimate preparations are made for the operation the foot of the bed is elevated, but you can tell the difference every time in the position of the intestines in patients remaining in the horizontal position until the abdomen is opened. For twenty years I have invariably directed that the foot of the bed be elevated when the operating table is wheeled into the operating room. We have an anesthetizing room and then wheel the patient into the operating room and then the foot of the bed is immediately elevated. I am absolutely sure that Dr. Guthrie's plan is of tremendous value.

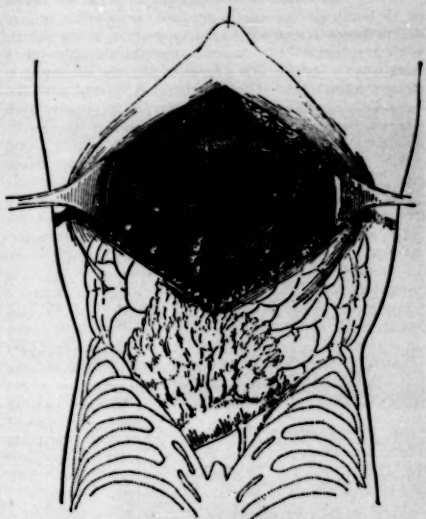

Fig. 6.—Trendelenburg anesthesia: coils of small intestine gravitated out of pelvis when patient is anesthetized in this position.

Dr. Donald C. Balfour, Rochester, Minn.: Dr. Guthrie had brought out a point in operative procedure that can well be kept in mind at all times. We follow out practically the same practice. We make the time a little later in which the patient is put in the Trendelenberg position, that is, as soon as the patient is unconscious of what is going on. In the majority of cases there is then sufficient time for the pelvis to be practically clear of small intestine. In my own observation much trauma is occasionally caused because of the impatience of the surgeon. Instead of being willing to wait until the patient is well relaxed and the intestines can easily be blocked off from the pelvis by gauze, their impatience is so great that while the patient is straining they try to force the intestines into the abdominal cavity rather than waiting for good relaxation.

Dr. Donald Guthrie, Sayre, Pa.: I would like to emphasize two points. First, the method of lifting the abdominal walls up after the peritoneum is opened. Any coils of intestine that have not gravitated out of the pelvis during the anesthesia can, as a rule, be made to slide upward. Second, I believe that we can get better results in fully anesthetizing patients in the Trendelenburg posture rather than to anesthetize them in the dorsal position and then change to the Trendelenburg position before the abdomen is opened, as mentioned by Dr. Balfour. This method cannot be employed successfully except by a skilled anesthetist, who is well trained in suggestion.

Entymology and Disease.—An outstanding feature of the louse and bedbug studies is the fact that these insects do not spread disease by biting but by being scratched into the flesh or having their feces scratched into the flesh. The importance of these studies must not be minimized for quite possibly we have here a probable explanation of the means of ingress for a number of other diseases which have baffled investigators.—W. D. Pierce, *J. Econ. Ent.* 12:43, 1919.

ABDOMINAL SURGERY UNDER LOCAL ANESTHESIA *

ROBERT EMMETT FARR, M.D.
MINNEAPOLIS

The literature on local anesthesia deals so uniformly with arguments regarding the merits of local as compared with general anesthesia that one hesitates to bring up for discussion that phase of the subject. The personal equation, however, enters so largely into the question that the advantage of one over the other, aside from the element of safety, will depend to a great extent on the experience of the operator. Those who are for any reason unable successfully to perform a large variety of operations under local anesthesia are at once a unit in deciding that general anesthesia has more advantages. On the other hand, those who can with satisfaction perform a large variety of operations by the local method will be found to hold the opposite view. It must be admitted that at the present time a vast majority of surgeons believe that general anesthesia is the method of choice, and that local anesthesia should be reserved for minor and for extreme cases. That sentiment is undergoing a rapid change in favor of local anesthesia must be admitted also. It is my belief that the opinion of a surgeon regarding the relative merits of the two methods will vary in accordance with his experience, and that the more experience one has with local anesthesia, the more successful he will be with it and the more enthusiastic he will become regarding its use. I believe that local anesthesia represents one of the greatest advances of the time, and that, provided no other method is discovered to supplant general anesthesia, the latter will to a large degree be replaced by the local method.

Fig. 1.—Pneumatic injector: *A*, glass cylinders for procain; *B*, pressure tank for compressed air; *C*, motor; *D*, rheostat; *E*, compression pump; *F*, cotton filter; *G*, air gage; *H*, valves; *I*, flexible metal tubing; *J*, cutoff; *K*, needle; *L*, suction bottle; *M*, rubber tubing for suction; *N*, suction tip; *O*, towel rack.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventieth Annual Session of the American Medical Association, Atlantic City, June, 1919.

ADVANTAGES OF LOCAL ANESTHESIA

I shall enumerate some of the advantages of local over general anesthesia, and reserve the balance of the time allotted me for a consideration of the methods which, in our hands, have given satisfaction.

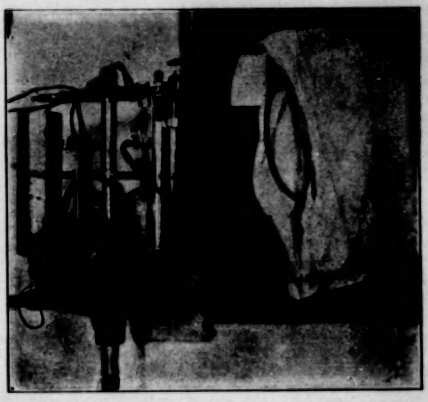

Fig. 2.—Pneumatic injector, "set up," filled and ready for use. Note sterile towel, protecting tubing. By turning down the upper end of this towel we develop the diaphragm shown in Figures 5 and 7.

First of all, the one great advantage of local over general anesthesia is that of safety. That procain is safer than any of the general anesthetics is, I believe, admitted by all. The other main points to be considered relate to the comfort of the patient and the efficiency of the anesthesia. There is some question as to which of these two points should be considered the more important. While the comfort of the patient is an extremely important matter, I consider the manner of performing the operation of even greater consequence. I wish, therefore, to call attention to some significant factors relating to the efficiency of an operation performed under local as compared with one performed under general anesthesia.

In all operations one is confronted with the consideration of such factors as hemorrhage, sepsis, trauma, exposure, time and shock. These factors are not necessarily mentioned in the order of their importance; as a matter of fact, their relative importance varies in different operations. I wish briefly to consider each one of these factors in relation to these two methods of anesthesia.

Hemorrhage. — It is pretty definitely established that shock bears a direct relation to the amount of blood lost during an operation. In local anesthesia, the use of epinephrin and the possibility of doing more deliberate work give one a control over the blood supply that is superior to that offered under general anesthesia. Another factor which is not fully appreciated by those who do not do a fairly large amount of local work is the turgescence of the vessels, especially

in the venous system, when general anesthesia is used. This is especially noticeable in work about the neck and head, and is also markedly apparent in abdominal work. The distended and engorged vessels so frequently seen during general anesthesia are uniformly collapsed during local anesthesia.

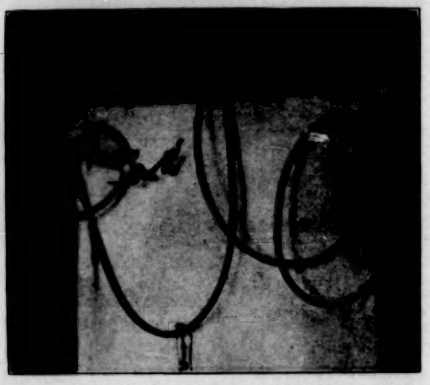

Fig. 3.—Pneumatic injector, cutoff and suction tubing within easy reach of surgeon's hand, and separated from the injector and anesthetist by sterile towel.

Sepsis.—The dangers from sepsis probably differ very lightly in the two forms of anesthesia. To my mind, however, what advantage exists is in favor of local anesthesia, for the reason that operations performed under local anesthesia may be done more deliberately and with more attention to detail than is possible when general anesthesia is used. In abdominal work, especially, the excursion of the abdominal viscera with respiration, during general anesthesia, is oftentimes marked, and may cause considerable embarrassment. The placid condition of the viscera under local anesthesia possibly gives one technical advantages. In the case of localized abdominal infections, for instance, it is not uncommon to see a spread of the infection result from the struggles of the patient while going under or emerging from general anesthesia; and I myself have witnessed a number of cases in which localized abscesses had ruptured internally during anesthetization or at operation. On the other hand, with a perfect local anesthesia and careful handling of a patient I have never seen this accident occur. During operation, abdominal packs may be introduced without danger of rupturing an abscess, and after operation the perfect physical rest attained aids in preventing the spread of a septic process. Postoperative vomiting and restlessness undoubtedly interfere with nature's process of localizing abdominal infections.

Trauma.—One of the greatest advances in surgical technic of the last two decades has resulted from the realization that the tissues should be traumatized as little as possible during surgical operations. To local anesthesia, and to those who have employed it, must largely go the credit for this advance. Sepsis and morbidity following operations are closely related to the degree of trauma inflicted during operation. I am sorry to say that one still sees, all too frequently, a violation of the principle that the tissues should be traumatized as slightly as possible, and in this regard those using local anesthesia are not the offenders, but are, as a class, leaders in teaching the necessity of delicate handling of the tissues.

Exposure.—When one observes the exposure that may be obtained in abdominal work under a good infiltration anesthesia, resulting in a negative intra-abdominal pressure, with the viscera retracting from the laparotomy wound instead of extruding through it; when one sees organs lying in their natural position, devoid of engorgement and motion, he must at once realize that nothing but the most profound general or spinal anesthesia will give as good an opportunity for inspection and operative work in this region. True, the viscera may not be delivered or displaced and handled as readily; distant digital explorations are not so easily made, and adherent masses are not so easily dealt with. If we confine the use of local anesthesia, however, to the class of cases in which it is indicated, and if we agree that, to a large extent, visual rather than digital exploration should be made within the abdominal cavity, local anesthesia compares favorably in offering adequate exposure.

Time.—The element of time quite naturally presents itself along with the other factors. The argument so frequently presented that the excess of time required for local over general anesthesia cannot be spared by the surgeon should, it seems to me, be unworthy of consideration. I wish to consider the element of time only in relation to the patient's welfare. Other things being equal, it will, I think, be admitted that an operation which is done deliberately will receive more attention to detail and be performed with more finesse than when the surgeon is making every effort to finish the operation as quickly as possible. A consideration of this feature must surely result in findings in favor of local over general anesthesia.

Fig. 4.—Apparatus in use: Abdominal tumor delivered. Relative positions of anesthetist, patient, surgeon, pressure and suction tubing, with sterile towel as diaphragm definitely isolating the operative field. Injector is to the right, outside the field of the illustration.

Shock.—Assuming that the amount of hemorrhage and trauma are reduced by the use of local anesthesia,

the natural inference would be that there would be less shock following operations performed under local anesthesia. This is undoubtedly true and this fact is, I think, recognized by all. It will take but a small series of major abdominal operations performed under local anesthesia to convince anyone that the condition of the patients following these operations is not to be compared with the condition we are accustomed to see after serious abdominal sections performed under general

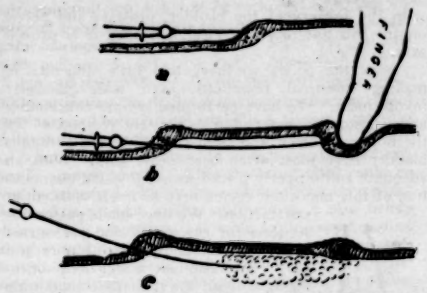

Fig. 5.—Sectional views of the skin: *a*, method of making first dermal wheal; *b*, painless subcutaneous method of making secondary wheals; *c*, method of making subdermal infiltration.

anesthesia, even though fairly careful technic has been followed in the latter. Three or four of these patients operated on during a morning can be cared for by a student nurse during the rest of the day, while she attends to her other duties, whereas few surgeons would be careless enough to leave any patient who has had general anesthesia without constant attendance on the part of a nurse for a few or perhaps several hours following the operation. The absence of thirst, nausea and vomiting, with their resultant dangers and disagreeableness, the low percentage of gas pains, which occur almost directly in proportion to the amount of trauma inflicted by abdominal packs and handling, are in marked contrast to that which takes place in patients who have been operated on under general anesthesia. I believe that surgeons have become so accustomed to feeling that the patient who must undergo a surgical operation is entitled to twelve, twenty-four or thirty-six hours of "hell" following it, that we do not appreciate the seriousness of the condition. Would it not be a good plan for every surgeon to spend occasionally the following twelve to twenty-four hours in the ward with several of the patients on whom he had operated under general anesthesia during the forenoon? The education obtained would almost equal that acquired by having the method applied to oneself.

The percentage of abdominal operations that may be performed with satisfaction under local anesthesia will, as I have already stated, depend largely on the experience of the operator. I have found that conditions which a few years ago I thought were amenable only to surgery under general anesthesia I now handle with the greatest ease and satisfaction under local anesthesia. The realization of the fact that operations begun under local may be finished under general anesthesia, in case it becomes necessary, has greatly increased the scope of the method. At present we begin all of our abdominal operations, regardless of the age of the patient, under procain anesthesia, and change to general without hesitancy when it is advisable.

A discourse on this subject would be incomplete without a reference to the question of local anesthesia in children. In our experience, abdominal operations may be performed on children with as great facility as on adults, or even greater. We have repeatedly made laparotomies on very young children without signs of distress from the time the abdomen was opened until the closure was made. In two recent cases of hypertrophic pyloric stenosis, in babies under 6 weeks of age, the entire operation was completed without an outcry or expulsive effort on the part of the babies. This operation, which is considered a serious one, is by this method converted into what might be called a minor procedure, which may be carried out with almost ridiculous ease.

TECHNIC

The local anesthetic of choice is procain, 0.5 per cent. in Ringer's solution, combined with epinephrin, 5 drops to the ounce.

In all except hernia cases we depend on a direct infiltration of the abdominal wall rather than on a conduction anesthesia. All layers of the abdominal wall are infiltrated before the incision is made. We consider the necessity of supplementary injection of procain as an indication that our technic has been faulty.

In making the infiltration, minute attention is given to details. The ideal aimed at is to deposit the fluid equably throughout the desired area without any sensation of pain on the part of the patient after the first needle prick, which is made for the production of the initial intradermal wheal. All subsequent wheals are made from beneath (Fig. 5), and the intradermal wheal is repeated only for the purpose of secondary introductions of the infiltrating needle as the field is traversed. Aside from the wheal points, the skin is anesthetized by a subdermal infiltration. A 4-inch record needle, No. 23, is used. Through this a wall of infiltration is built beneath the proposed line of incision, with a base of from 2 to 3 inches in width, the apex being the line of incision through the skin (Fig. 6).

Fig. 6.—Section of abdominal wall, showing area infiltrated.

Equipment. — Ten years ago we discarded the syringe and substituted the pneumatic injector (Figs. 1, 2 and 3) for this work. This apparatus gives us a constant flow of the solution with a steady pressure controlled by a cutoff, which is ideal from the standpoint of ease of manipulation. With this instrument the ordinary abdominal wall can be anesthetized in from two to three minutes, and, as the incision may be made immediately, much time is saved. The average time, from the beginning of the administration of the anesthetic until the abdomen is opened, is from five to seven minutes. Throughout

this procedure every effort is made to eliminate the slightest sensation of pain on the part of the patient. If this is accomplished and the abdominal walls gently retracted vertically, the abdominal viscera will not protrude through the opening but will fall away from the field of operation, and, by making use of the force of gravity, all the viscera in the region of the incision may be examined visually without handling. Per contra, should the injection be carelessly or too rapidly made, or certain sensitive areas be missed in making the infiltration, and the incision thereby cause pain, there will be established a combative action on the part of the patient, and an expulsive effort which will cause an extrusion of some of the viscera. In the absence of acute infections and marked distention of the intestine, the viscera should not protrude through the abdominal wound in the presence of a perfect local anesthesia, unless, perhaps, the patient should inadvertently cough, sneeze or laugh.

Retraction of the Abdominal Wall.—Careless or vigorous retraction of the abdominal wall will also produce the expulsive effort which we wish to avoid. With the flaccid abdominal walls usually found under local anesthesia, only the mildest kind of retraction is necessary. I find that the most satisfactory retractor is the wire automatic, which gently and symmetrically spreads the incision (Fig. 7).

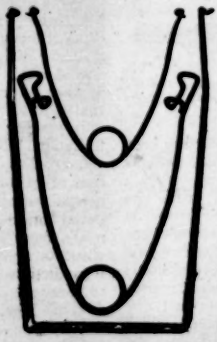

Fig. 7.—Automatic wire retractors.

Sensitive Areas.—There has been considerable investigation concerning the sensations within the peritoneal cavity. Observations vary in this regard, and different patients seem to vary to some extent. The areas are more or less constant, however, in response to pain sense. We have found pressure and traction on the round ligaments of the uterus to be painful; and that the ovarian pedicles, the meso-appendix and the region of the cystic duct, are also sensitive. Traction on the mesentery is much more apt to cause nausea than acute pain, and one must be especially careful about making traction on the cecum and duodenum.

SCOPE OF LOCAL ANESTHESIA

Lower Abdomen.—All pelvic conditions of a simple nature may be handled under local anesthesia with great satisfaction. As a certain percentage of pelvic work, however, either is complicated by the sequelae of infectious processes or must be done to eradicate malignant disease, one encounters a fairly large percentage of cases that are difficult to handle under straight infiltration anesthesia.

Caudal Anesthesia.—For a number of years we have been testing a combined caudal anesthesia with an infiltration of the abdominal wall in conditions in which difficult pelvic work is anticipated. The anesthesia acquired in this way is usually ideal, and the complete Wertheim may be performed, or, in fact, any pelvic operation may be readily performed under the combined method.

The administration of procain by the caudal method is simple and is quickly given. In my experience, patients are more apt to show toxic symptoms when this form of anesthesia is employed than if infiltration only is used. A number of patients have shown pallor, increased respiration and pulse rate, faintness and occasional nausea. While we have seen nothing to be alarmed about, I believe that the utmost care should be used in making the injection. It should be made through a flexible needle, which is not liable to break off in the canal, and the injection should be made slowly. A rapid injection will cause pain and is said to be more apt to cause toxic symptoms. Furthermore, one should avoid making the injection directly into the blood stream.

In the surgery of the bladder, prostate and pelvic organs this anesthesia is ideal, provided it is proved safe.

Above the pelvis we have had little difficulty in making intestinal resections, even with glandular involvement. We have performed several colectomies and colostomies, enterectomies and enterostomies. In the upper abdomen, the stomach, duodenum and gallbladder have most often been dealt with. With an adequate and properly placed incision, visual examination of this important region may be made with entire satisfaction. We have made gastric resections for carcinoma and perforated ulcer, pylorectomies, gastrostomies and gastro-enterostomies under local anesthesia without the patients complaining of pain. Cholecystostomy is an exceedingly simple procedure, in most instances, under local anesthesia. When it comes to the removal of a gallbladder, we have been unable to develop a painless operation. We have, however, accomplished the removal in over 90 per cent. of our cases without resorting to general anesthesia, always allowing the patient the privilege of taking a general anesthetic if the distress becomes too marked. Traction on and clamping of the cystic duct is invariably painful, although in recent cases an infiltration between the gallbladder and the liver and about the cystic duct has rendered the operation almost painless. Work on the common duct will depend entirely on its accessibility. We have removed stones from the common duct and explored this organ numerous times without the least difficulty. Of course, the presence of marked adhesions, with the retraction of the organ up behind the liver, will necessitate general anesthesia.

In gallbladder and duct work it is inadvisable to dislocate the liver, as is recommended for cases under general anesthesia. Instead of "up-ending" the liver outside of the abdominal cavity, we produce much the same effect by using blunt retractors on the liver edge and "up-ending" it beneath the ribs, thus bringing the gallbladder and ducts into view. During this procedure one pad of gauze holds the stomach and pylorus downward and to the right, while another pad is placed between the gallbladder and the duodenum. With perfect anesthesia, only slight retraction is necessary. If the anesthesia is incomplete, however, and the patient strains, nothing can be accomplished by the method.

One of the most satisfactory conditions to handle under local anesthesia has been extensive adhesions between the viscera or omentum and the abdominal wall. Ample incision and vertical retraction will allow the adherent viscera to hang from the abdominal wall in such a position that the adhesions may be divided

on the white or bloodless line, and the most extensive work may be done with slight or no discomfort to the patient.

All plastic surgery on the abdominal wall, with or without adhesions, falls readily into the ideal class for local anesthesia.

One of the disconcerting factors in abdominal work under local anesthesia is the occasional vomiting of the patient. While this accident is generally due to some overt manipulation, it has to be reckoned with, and we have not been able entirely to eliminate it. This emergency has not arisen in more than 5 per cent. of our cases.

OBJECTIONS TO LOCAL ANESTHESIA

The objections to the local method are both real and imaginary. There is undoubtedly a class of cases in which general anesthesia should always be used. There is, I believe, also a class in which local anesthesia should always be used. That the latter class could be greatly increased with an improvement over the results obtained at present in the large clinics I also firmly believe. The objection that wide explorations cannot be made under local anesthesia is to some extent true, and yet it is to a large degree offset by the fact that wide explorations not made under the direction of the eye seldom give authentic information. How absurd it is, for instance, to see a surgeon extend his gloved hand to the region of the kidney and state that that kidney is normal, and perhaps at the next operation deliver a kidney and spend a considerable time endeavoring to decide whether or not it is normal! Yet we see this absurd procedure carried out daily at many of our best clinics. Of course, a very advanced pathologic condition may be recognized by the introduction of the hand to some distant part of the abdomen; but there are few instances of this kind which cannot be diagnosed before the exploration is made, and, in cases in which the pathologic condition is not advanced, this method of examination is usually unsatisfactory. Furthermore, the introduction of the hand, under local anesthesia, is not an exceedingly painful procedure. With the abdominal wall elevated there is usually room to insert the hand and part of the arm with almost no contact with the surrounding tissues. It is my custom to examine the pelvic organs in gallbladder cases, and vice versa, although, for the reasons already mentioned, I feel that such examinations are possibly overrated with regard to their value.

Working under local anesthesia requires more time, but experience and proper equipment bring this much discussed factor into comparative insignificance. The strain on the surgeon is undoubtedly greater when working under local anesthesia; but if we accept the dictum that the all important factor is the patient's welfare, this objection must be eliminated; and the experience of the surgeon will here, again, make a decided difference. During recent years I find much more comfort in operating on patients under local than under general anesthesia.

CONCLUSION

The use of local anesthesia should no longer be confined to minor surgery and to cases in which the patient apparently cannot undergo the ordeal of taking a general anesthetic.

With proper equipment and technic, a large proportion of major surgery may be done under local anesthesia with greater safety, less trauma, more completeness and less postoperative discomfort than when general anesthesia is employed.

Children lend themselves readily to the method.

The abdominal field presents a most excellent territory for the use of local anesthesia.

ABSTRACT OF DISCUSSION

DR. P. G. SKILLERN, JR., Philadelphia: The pneumatic injector devised by Dr. Farr greatly facilitates and accelerates the establishing of local anesthesia, since it does away with the necessity of picking up and putting down one syringe after another. I have used his apparatus with great satisfaction, and should call this method "operating de luxe." As emphasized and practiced by Dr. Crile, operating under local anesthesia develops a gentleness of touch and technic that is of benefit to the patient. I do not think that local anesthesia has made the progress in surgery it should. Every one ought to be using it today. It is wonderful to be able to operate on these patients, painlessly, without loss of conscience, and have them go back to their room and greet their friends immediately afterward. Surely this is better than the distressing picture we see so often after ether anesthesia, the patient unconscious, tossing about and vomiting in the presence of his anxious relatives and still facing the dangerous after-effects of ether, such as pneumonia, etc. Some claim pneumonia follows the use of local anesthesia, but I have never seen it and cannot figure how it could occur, provided the chest is protected from exposure. The point I wish to bring out very strongly is my belief that local anesthesia should be used—and that nothing else should be used—in a patient suffering from great toxic shock. The illustration, *par excellence*, is acute intestinal obstruction. The high mortality in acute intestinal obstruction is due to the patient already severely shocked from toxins having superimposed on that another toxin in the form of ether. The present high mortality of the acute intestinal obstruction operation will be lowered decidedly if we employ local anesthesia and not ether.

DR. C. N. COWDEN, Nashville, Tenn.: The pendulum is swinging the other way, and the surgeon who is not giving much study to local anesthesia at this time is missing a great opportunity of keeping himself abreast of the times. The postoperative effects of ether are to be remembered forever. It is practically accepted by every one that procain in large dosage is virtually free of toxic effect. One great difficulty is our lack of confidence in our ability to do these operations under local anesthesia. It is difficult to infiltrate a nerve, but we get practically the same effect by infiltration of the area through which the nerves pass. Gentleness in handling tissues, the sharp knife or scissors, lack of blunt dissection are factors which make for the success of operation under local anesthesia. Quinin and urea hydrochlorid has been responsible for some of the unpopularity of the local anesthesia operation, but the disastrous effect of that has now been banished. Operation under local anesthesia is one of the greatest advances made in the last year or two. The automatic injector adds greatly to the success of the method.

DR. J. A. RUBIN, Pittsburgh: Local anesthesia is the coming thing. I have been operating rather extensively under local anesthesia for about six years. Possibly the reason surgeons have failed to develop their local anesthesia technic is the fact that in a great many cases there is sloughing of the wound. Quinin and urea hydrochlorid is very bad for that. Procain alone will not give the desired anesthesia; it must be combined with epinephrin. In operating the field is dry; there is very little bleeding, and the operation is almost like a dissection on a fresh cadaver. By keeping the anesthetized area an inch or more away from the incision we can, in large measure, prevent sloughing or necrosis of tissue.

DR. A. C. SCOTT, Temple, Texas: When one undertakes to explore the abdomen under local anesthesia he can get just so far. The peritoneum cannot be anesthetized throughout. Although you may anesthetize the abdominal wall completely you will not be able to anesthetize the whole abdominal cavity. According to Dr. Farr you should depend more on visual

than on digital exploration. This is very good so far as it goes, but it seems to be a confession that the exploration cannot be made completely. I would not feel satisfied to close the abdomen without feeling the gallbladder, kidneys, pancreas and other viscera. You cannot make a satisfactory exploration of the abdomen without using the sense of touch. In anesthetizing the peritoneum near the abdominal incision, one of the best bits of technic is, as soon as a small opening is made through the peritoneum, to slip one finger on the inside of the peritoneum about 2 inches back from the margin of the wound and by placing the hypodermic needle directly through the rectus muscles the point of the needle touches the finger; the opening in the needle is exactly in the right position to infiltrate the subperitoneal tissue at the site of the most sensitive nerves. By doing that up and down both sides of the incision you secure the best sort of anesthesia of the abdominal peritoneum in the neighborhood of the wound. One part of abdominal work which cannot be done with local anesthesia without pain is in conditions in which you have to make traction on the mesentery. As soon as you pull on the meso-appendix in appendix operations, pain is produced. In ovarian cyst found during pregnancy, when you fear to give a general anesthetic we get magnificent results from local anesthesia. I have used it in diffuse peritonitis where the patient had double pneumonia and yet I did not dare let the peritonitis go without drainage and had equally good results. I have also used it in gastrectomy and conditions of that kind.

DR. ROBERT E. FARR, Minneapolis: I am not much of a golf player and do not believe in making all shots with one stick. However, when I do shoot I generally use my best stick. To my mind, the best stick in anesthesia up to date is local anesthesia, providing it can be used successfully. We see the same difficulty today with local anesthesia that we usually see when a man reads a paper on this subject. He is like the Christian scientists: he will not argue. These papers are discussed by local anesthesia enthusiasts who spend their time picking out a few of the known shortcomings of the method. Dr. Scott says: "You can not explore the abdomen." I say I can. If he cannot, I can not help that. Dr. Ruben says: "We have necrosis of the skin." I say we do not. We never have necrosis of the skin. If we keep the epinephrin below five drops to the ounce and put procain up in Ringer's solution, and make subdermal instead of intradermal infiltration, we do not have necrosis. Local anesthesia should not be blamed for the shortcomings of those who use it. I have been trying to make the use of local anesthesia simple. This can be done by the method I described and by the use of the apparatus shown. If by this method we can get anesthesia in approximately 100 per cent. of cases, why should we introduce double the amount of anesthetic surrounding the field of incision instead of infiltrating directly into it? Nerve blocking has its place and is an excellent method, but it requires an expert to spear for nerves, and this method will never become common. The method should be simple and easy for all to learn. I am not in sympathy with the idea of reserving local anesthesia for extreme cases. If this is a good thing for bad cases it should be a good thing for good cases. I believe that it is a good thing for all cases in which it can be used.

Virginia Antituberculosis Work.—The work is done county by county. One of the workers gets permission to appear before the council or board of supervisors, outlines the nature of the work and asks to be allowed to make certain investigations, saying that no obligation is attached to this, but that when the work is completed, certain reports and resolutions will be made which can be acted on at the discretion of the governing bodies. A few interested people are interviewed, the field nurse is introduced, and she does the rest, such as get in touch with families and with the doctors of the community, and offers her services for instructive care and beside nursing when necessary. She will send patients to sanatoriums, arrange for free clinics, and health talks in the churches and at public meetings.—*Journal of Outdoor Life.*

STUDIES IN INFLUENZA AND PNEUMONIA

IV. FURTHER RESULTS OF PROPHYLACTIC INOCULATIONS.*

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To determine the value of vaccination against disease, it is essential that the disease shall be one which a relatively large number of persons will develop unless protected, and that it be accompanied by serious consequences. These conditions were amply fulfilled during the pandemic of influenza. Moreover, the vaccine should contain the killed bacteria that produce symptoms and which are at least contributory to the cause of death. We have attempted, so far as possible, to fulfil this requirement by making a careful bacteriologic study of the disease, and by incorporating into the vaccine the important bacteria isolated. The epidemic was severe, and the need and the demand for vaccination were great; a large number of cases were available for bacteriologic study and to supply the proper strains for the vaccine. Vaccinations in large numbers during the past ten years with bacteria belonging to the group found in influenza have at least proved harmless, and in the case of pneumonia, prophylactic vaccinations have been successfully carried out by Wright,[1] Lister,[2] and Cecil and Austin.[3] A splendid opportunity to study the effect of prophylactic inoculation was at hand. Owing to the foresight of the founders of the Mayo Foundation, necessary funds to meet the emergency were available. A large amount of the vaccine has been prepared and sent gratis on request to numerous physicians on condition that reports of the results be returned.

In a previous report,[4] the reasons for the use of a mixed vaccine containing, as far as possible, freshly isolated strains were discussed. It was pointed out that the streptococci, especially green-producing streptococci from influenza, have certain peculiar properties. The preliminary results, as reported from the use of this vaccine, indicate that considerable protection is afforded against influenza and especially against the accompanying pneumonia. Vaccinations were begun soon after the onset of the epidemic. The period of observation was six weeks. It is our purpose in this paper to emphasize essential points in the preparation of the vaccine, to present further results from its use, and to record certain immunologic experiments.

* From the Division of Experimental Bacteriology, Mayo Foundation.

* This paper and that of Dr. G. W. McCoy which follows are part of a symposium on "Influenza." The remaining papers and the discussion will appear next week.

* Read before the joint meeting of the Section on Pharmacology and Therapeutics, the Section on Pathology and Physiology and the Section on Preventive Medicine and Public Health at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Wright, A. E.; Morgan, W. P., et al.: Observations on Prophylactic Inoculation Against Pneumococcus Infections and on the Results Which Have Been Achieved by It, Lancet 1: 1-10 (Jan. 3) 1914.

2. Lister, F. S.: Prophylactic Inoculation of Man Against Pneumococcal Infections and More Particularly Against Lobar Pneumonia; Including a Report on the Results of the Experimental Inoculation, with a Specific Group Vaccine, of the Native Mine Laborers Employed on the Premier (Diamond) Mine and the Crown (Gold) Mines in the Transvaal and the de Beers (Diamond) Mines at Kimberley—Covering the Period from Nov. 1, 1916, to Oct. 31, 1917, Publications of the South African Institute for Medical Research, Johannesburg, South Africa, W. E. Horter and Company, Ltd., 1917, pp. 1-30.

3. Cecil, R. L., and Austin, J. H.: Prophylactic Inoculation Against Pneumococcus, J. Exper. M. 26: 19-41 (July 10) 1918.

4. Rosenow, E. C.: Prophylactic Inoculation Against Respiratory Infections: Preliminary Report, J. A. M. A. 73: 31-34 (Jan. 4) 1919.

COMPOSITION AND PREPARATION OF THE VACCINE

Influenza bacilli were isolated in large numbers at the outset of the epidemic, but they were rarely found later in the epidemic. The small fraction of influenza bacilli included in the first few batches of vaccine were therefore omitted, and the vaccine was made to contain a proportionately higher percentage of the green-producing streptococci. In other respects, the original formula has been adhered to. The formula as used in almost all cases covered by the present report is given in Table 1.

TABLE 1.—FORMULA OF VACCINE

Pneumococci, Types I (10 per cent.), II (14 per cent.), and III (6 per cent.)	30 per cent.
Pneumococci Group IV and the allied green-producing diplostreptococci described	40 per cent.
Hemolytic streptococci	20 per cent.
Staphylococcus aureus	10 per cent.

The preparation of the medium, the method of cultivating and collecting the bacteria, and the procedure of standardizing the dose and killing the bacteria are described in the preliminary report.[4] The vaccine, it will be remembered, was made to contain approximately 5 billion bacteria for 1 c.c. Later, the concentration was made twice as great, and the quantity of liquid was reduced to one-half. The injections were given subcutaneously one week apart. The first dose of the concentrated vaccine (0.25 c.c.) contained 2.5 billion, the second (0.5 c.c.) 5 billion, and the third (0.75 c.c.) 7.5 billion bacteria. Considering the large size of these doses and the reactions obtained, the injections should not be given oftener than once a week in order not to overstimulate the mechanism of immunity.

The tendency of streptococci to undergo changes and to lose specific properties has been repeatedly emphasized by one of us. It was thought important that freshly isolated strains should be included in the vaccine. In Table 2 are given the culture generations of all the strains that have been used throughout the epidemic. The fermentation power was tested of fifty-seven strains of the green-producing streptococci included in the vaccine; only twenty-seven fermented inulin, and only eight were bile soluble.

The advantages which should come from the use of a lipovaccine, particularly when a series of strains needs to be included, have already been pointed out, and a simple method for the preparation in oil of a vaccine of the formula given in Table 1 has been developed and submitted for publication. A further study of the sputum and other material shows that of all the bacteria isolated, the somewhat peculiar green-producing streptococcus or diplostreptococcus is the most important. This organism is present in large numbers at the very outset of symptoms of influenza and of the accompanying pneumonia; it is commonly present after death. If the sputum or mass cultures are injected intraperitoneally into animals, they die, usually from invasion of the green-producing streptococci or pneumococci. If injected intratracheally in guinea-pigs the picture of influenzal pneumonia is closely simulated. Immunologic experiments with the serum from a horse injected with one strain indicate that most of the strains are immunologically alike. The serum of cases of influenza develops agglutinating power over these strains.

AGGLUTINATING POWER

In Table 3 it is shown that the vaccine used possessed well marked antigenic powers. The strains S 1, S 3, 2598³.2, 2604.2, 3048.3, and 2874².3 were green-producing streptococci or pneumococci; 2575.2, a hemolytic streptococcus, and 2608³.2, a staphylococcus from cases of influenza. It will be noted that agglutinins appear in the serum on the tenth day and persist for six weeks. Table 3 shows, moreover, that

TABLE 2.—CULTURE GENERATION OF BACTERIA FROM INFLUENZA AS USED IN THE VACCINE

Cultures	Green-Producing Streptococcus	Hemolytic Streptococcus	Staphylococcus
Third generation or below	58	18	18
Fourth to tenth generation	86	20	8
Eleventh to twentieth generation	21	0	0
Total	174	38	26

the bacteria in the vaccine (492) used as the antigen in the first column were susceptible to agglutination. This vaccine was prepared three months previously and was kept in the ice chest. Most of the strains used as antigen in the experiment recorded in this table were not included in the vaccine used to immunize the persons whose serums were tested. All the green-producing streptococci were agglutinated, however, by the monovalent horse serum.

TABLE 3.—AGGLUTINATING POWER OF THE SERUM OF PERSONS INOCULATED WITH SALINE VACCINE

Serums (Dilutions 1:20)	Strains: 492	S 1	S 3	2,598³.2	2,604.2	3,048.3	2,874².3	2,575.2	2,608³.2
2,542 24 hours before third dose saline vaccine	0	0	0	0	0	+	+	0	0
2,542 24 hours after third dose saline vaccine	0	0	0	0	0	+	+	0	0
2,542 48 hours after third dose saline vaccine	0	0	0	0	++	++	++	0	0
2,542 10 days after third dose saline vaccine	+	++	+	0	++	++	+++	++	0
2,542 6 weeks after third dose saline vaccine	+	++	..	..	++	..	..	..	0
2,543 24 hours before third dose saline vaccine	0	0	0	0	+	0	0	0	0
2,543 24 hours after third dose saline vaccine	0	0	0	0	+	0	0	0	0
2,543 48 hours after third dose saline vaccine	+	0	0	0	++	0	++	0	0
2,543 10 days after third dose saline vaccine	++	+	0	0	++	++	+++	+	+
2,543 6 weeks after third dose saline vaccine	++	+	0	0	+++	++	++	+	0
2,545 24 hours before third dose saline vaccine	0	0	0	0	0	0	0	0	0
2,545 24 hours after third dose saline vaccine	0	0	0	0	0	0	0	0	0
2,545 48 hours after third dose saline vaccine	0	0	0	0	+	0	0	0	0
2,545 10 days after third dose saline vaccine	++	c	0	0	++	++	++	++	++
2,545 6 weeks after third dose saline vaccine	++	0	0	+	++	++	++	++	++
2,547 24 hours before third dose saline vaccine	0	0	0	0	0	0	0	0	0
2,547 24 hours after third dose saline vaccine	0	0	0	0	0	0	0	0	0
2,547 48 hours after third dose saline vaccine	+	0	0	0	+	+	+++	0	0
2,547 10 days after third dose saline vaccine	++	c	+	+	++	++	++	0	0
2,547 6 weeks after third dose saline vaccine	++	0	+	+	++	++	++	0	++
2,075 normal	0	0	0	c	0	0	0	0	0
2,076 normal	0	0	0	0	0	0	0	0	0
NaCl	0	0	0	0	0	0	0	0	0

In Table 4 are given the results following the injection of a single dose of the lipovaccine (from 25 to 75 billions) in three persons. It may be noted that the amount of agglutination is greater than that following the injection of the saline vaccine, but here, as in the case following the injection of the saline vaccine, not all strains are equally susceptible to agglutination, and some are not agglutinated at all.

TABLE 4.—AGGLUTINATING POWER OF THE SERUM OF PERSONS INOCULATED WITH LIPOVACCINE

Serums (DIlutions 1:20)	Strains						
	2,271[1].3	2,296[2].2	2,321	2,332.2	2,334.2	2,334.3	2,342
2,074 normal	0	++	+	+	0	++	0
2,074 4 days after lipovaccine	+	+++	++	++	+	++	0
2,074 10 days after lipovaccine	+++	++++	+++	++	++	+++	0
2,074 6 weeks after lipovaccine	++	+++	++	+	+	++	0
2,075 normal	0	++	0	0	+	0	0
2,075 4 days after lipovaccine	++	+	0	0	+	++	0
2,075 10 days after lipovaccine	+	++++	+	+	++	++	0
2,076 normal	0	++	+	0	0	0	0
2,076 4 days after lipovaccine	+	+++	+	0	+	0	0
2,076 10 days after lipovaccine	++	+++	++	0	+	0	0
2,076 6 weeks after lipovaccine	+++	++++	+	0	++	0	0
NaCl	0	0	0	0	0	0	0

Table 5 shows the agglutinating power of various immune horse serums over strains of green-producing streptococci from influenza, strains included in the vaccine. The serum from Horse 15, immunized with one strain from the blood of a patient who died, has marked agglutinating power over most of the strains. Of the thirty-three strains tested in this manner, twenty-five were agglutinated specifically by this serum. The results indicate clearly that among the green-producing streptococci, including Group IV pneumococci in influenza, there are strains which have a specific

TABLE 5.—AGGLUTINATING POWER OF VARIOUS IMMUNE HORSE SERUMS OVER STREPTOCOCCI INCLUDED IN THE VACCINE

Serums (DIlutions 1:20)	Strains												
	2,347.19	2,349.13	2,350.16	2,521.14	2,522.4	2,534.11	2,557.2	2,604.2	2,613[3].2	2,624.16	2,629[4].3	2,719[5]	2,709	2,809[6].2	2,825
Pneumococcus Type I	0	0	0	+	0	0	0	0	0	0	0	0	0	0	0
Pneumococcus Type II	++	0	0	+	0	+	0	0	0	++	0	0	0	0	0
Pneumococcus Type III	0	0	0	+	0	+	0	0	0	0	0	0	0	0	0
Horse 9	++	++	0	+	0	++	0	0	0	0	0	+++	0	0	++
Horse 15	++++	+++	++++	++++	+++	++++	0	+++	++++	++	++++	++	0	++	+++
Normal horse	0	0	0	+	0	+	0	0	0	0	0	0	0	0	0
NaCl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE 6.—RESULTS AS REPORTED IN QUESTIONNAIRES FROM ALL SOURCES

Groups	Total Number	Incidence for 1,000 Persons — Disease						Deaths			
		Influenza	Acute Edema of Lungs	Pneumonia	Empyema	Acute Edema of Lungs	Pneumonia	Empyema	Meningitis	Encephalitis	Total Deaths
Vaccinated once	26,936	118.2	3.1	8.7	0.29	0.14	2.6	0.07	0.18	....	3.0
Vaccinated twice	22,348	97.0	0.77	3.04	0.17	0.47	1.9	0.04	0.21	....	2.62
Vaccinated 3 times	93,476	87.9	0.5	4.4	0.18	0.18	1.2	0	0.05	....	1.43
Not vaccinated	345,133	281.8	4.4	21.0	0.83	1.7	2.37	0.07	0.15	0.03	8.55

relationship, and that we were fortunate in successfully separating them from the ordinary *Streptococcus viridans* and including them in the vaccine long before the results of immunologic experiments were available.

The apparent protection against attacks of influenza noted in the preliminary report, difficult to understand at that time, now becomes rational.

METHOD OF SECURING DATA

In most instances the reactions were mild, about one person in each 100 reacted more severely. Some reacted severely to all three inoculations, others only to one or two. Persons coming down with a cold or with symptoms of influenza are often hypersensitive. Marked diffuse redness resembling erysipelas about the site of inoculation, with swelling and, later, marked induration, has occurred occasionally. In no instance were the symptoms alarming. The number of severe reactions is sufficiently large, however, to prevent general vaccination except at the time of an acute emergency. This is in accord with the experience of Cecil and Austin,[3] noted during prophylactic inoculations with pneumococci. An outline for records of persons vaccinated was sent with each batch of vaccine and later a questionnaire. The questionnaire asked for the date of the onset of the epidemic, the date when the vaccine was first used, the week of the height of the epidemic, the week in which the greatest number of vaccinations were given, and the duration of the epidemic. The number of cases of influenza from the time the vaccinations were begun until the end of the epidemic, or up to May 1, and the number of deaths which occurred among the vaccinated and unvaccinated in the same period, in the practices of the physicians supplied with the vaccine, were asked. The reports of the use of the vaccine after the epidemic had disappeared were excluded. The period of observation in most instances was from four to five months.

In determining a safe criterion as to the value of the vaccine, we have purposely been unfair to the vaccinated group. The protection afforded among the vaccinated patients was measured from the day of the first vaccination, whereas, judging by the agglutination experiments, it should be calculated from about one week after the third injection.

There is another reason why we have arbitrarily decided to make our calculations from the day of the first vaccination. A procedure, calculated to protect against an epidemic disease, such as influenza, should have sufficient protective value when given after the onset of the epidemic to be measurable, for it is practically impossible to anticipate these epidemics and, moreover, persons will not present themselves for vaccination until the epidemic is at hand.

The questionnaire was arranged so as to yield information regarding the incidence of influenza, acute edema of the lungs, pneumonia and empyema, and the deaths from acute edema of the lungs, pneumonia, empyema, meningitis, and encephalitis among the vaccinated and the unvaccinated. Separate reports includ-

ing the foregoing points were asked for from institutions and in the cases of pregnant women. The impressions gained from the use of the vaccine regarding the severity of the disease if contracted following vaccination, and the effect, if any, which the vaccine had on certain chronic infections, such as bronchitis, sinusitis, myositis, and arthritis were asked for.

Many physicians were so overwhelmed during the height of the epidemic that accurate records could not be kept, and accordingly the reports containing accurate data are proportionately few. The reports of 530 physicians were fairly complete, however, and these are summarized in Table 6. It is realized that there must necessarily be errors in the morbidity figures as reported to us, just as in the case of reports to boards of health. It is generally agreed that as influenza became more prevalent and less severe, a proportionately smaller number of cases were reported, and that all morbidity figures reported are well below the actual figures. The error, however, among the vaccinated and unvaccinated groups in the reports to us, should be approximately the same, and hence the figures should be comparable. Mortality figures, on the other hand, may be considered as fairly accurate.

mer in these three decades were 23, 19, and 21, of the latter 13, 29, and 23, respectively. Through the cooperation of the Board of Health of Minnesota we were able to check the results as reported to us with the morbidity and mortality figures as reported to them. Reports on a considerable number of vaccinations were received from Brown, Chippewa, Clay, Dodge, Fillmore, Goodhue, Houston, Itasca, Lesueur, Lyon, Mower, Olmsted, Rice, Stearne, Steele, Wabasha, Waseca, Watonwan, and Winona counties. The total estimated population of these counties is 472,584. The total number of cases of influenza in these counties reported to the board of health from the beginning of the epidemic until May 1 is 30,763, or sixty-five for each thousand. This is admittedly a low figure. The total mortality rate as reported to the board of health during this time is 4.2. The mortality rate, excluding the deaths which occurred in the respective counties prior to the date of the first vaccinations, is 3.2 (Table 7). The figures in the table indicating the cases and the deaths as reported to us are believed to be more accurate. The mortality rate, exclusive of that of the Mayo Clinic, in the 17,532 persons vaccinated three times is only one fourth of that reported to the

TABLE 7.—RESULTS AS REPORTED IN QUESTIONNAIRES FROM NINETEEN COUNTIES IN MINNESOTA EXCLUSIVE OF THE MAYO CLINIC

		Incidence for 1,000 Persons				Deaths					
		Disease									
Groups	Total Number	Influenza	Acute Edema of Lungs	Pneumonia	Empyema	Acute Edema of Lungs	Pneumonia	Empyema	Meningitis	Encephalitis	Total Deaths
Vaccinated once...	4,868	115.1	0.4	3.29	0	0	0.2	0	0	0	0.2
Vaccinated twice..	4,029	88.3	0.74	3.7	0.47	0.47	1.9	0	0.47	....	3.2
Vaccinated 3 times	17,532	102.9	0.17	4.3	0.22	....	0.62	....	....	....	0.9
Not vaccinated....	36,100	373.5	1.39	20.4	0.6	1.4	4.0	0.13	0.16	0.02	6.35
As reported to State Board of Health..... (Estimated population)	472,584	65.3	....	....	....	....	....	....	....	....	3.2*

* Exclusive of deaths which occurred prior to the use of the vaccine and exclusive of the Mayo Clinic cases.

TABLE 8.—RESULTS IN OLMSTED COUNTY EXCLUSIVE OF MAYO CLINIC AND STATE HOSPITAL FOR INSANE

		Incidence for 1,000 Persons				Deaths					
		Disease									
Groups	Total Number	Influenza	Acute Edema of Lungs	Pneumonia	Empyema	Acute Edema of Lungs	Pneumonia	Empyema	Meningitis	Encephalitis	Total Deaths
Vaccinated once...	2,424	100.2	0	6.1	0	0.41	2.5	0	0	0	3.2
Vaccinated twice..	1,021	201.8	2.9	0	1.9	0	4.8	0	1.9	....	6.7
Vaccinated 3 times	9,300	41.0	0.13	2.9	0.43	....	0.43	0.21	....	....	0.64
Not vaccinated....	8,700	248.0	2.3	13.1	0.45	0.9	2.6	0.45	0.12	....	4.0

RESULTS OF INOCULATION

The total number of unvaccinated persons recorded in Table 6 represents the sum of the estimated clienteles of the various physicians reporting the cases, and averages about 1,200 for each. It will be noted that the incidence of influenza, of acute edema of the lungs, of pneumonia following influenza, and the number of deaths from all causes among the vaccinated are consistently lower than that among the unvaccinated. Moreover, the incidence of disease and deaths is lowest in the group of 93,476 persons who were vaccinated three times. The reports included in this table were from many states, but the largest number came from Iowa, Minnesota, and Wisconsin. Thirteen thousand, six hundred and fifty persons inoculated and 2,083 who died were grouped according to age by decades. The curves indicating the percentage in each run roughly parallel.

The largest number of inoculations were given and the largest number of deaths occurred between the ages of 11 and 40 years. The percentages of the forboard of health. Moreover, the total number of deaths among the vaccinated, including the persons inoculated only once and twice, is 1.6 for 1,000, or half the mortality rate as reported to the board of health during the same period of time. When we consider the fact that the deaths in each group were counted from the time the first vaccinations were given, which is really unfair to the vaccine, and the fact that our figures include all pneumonias, while those of the board of health include only the influenzal pneumonias, there seems little doubt that the difference must be due to the protection afforded by the vaccine. The figures given in Table 8 for Olmsted County, where about one third of the population was vaccinated, exclusive of the Mayo Clinic and the state hospital, are similar to those obtained elsewhere. The incidence of disease and the death rate among those vaccinated three times are well below that of those not vaccinated.

The results obtained in institutions in which the conditions among the vaccinated and the unvaccinated

were comparable are summarized and given in Table 9 in order still further to check the figures. The number of persons in most of the institutions included (fifty-three in all) was small. The opportunity for accurate observation was, therefore, favorable. The institutions included factories, personnel of hospitals, schools, and offices. The proportion of the vaccinated and unvaccinated varied between wide limits. The period of observation in the two groups was the same. The

TABLE 9.—RESULTS OF PROPHYLACTIC INOCULATION IN INSTITUTIONS WHERE THE CONDITIONS AMONG THE VACCINATED AND UNVACCINATED WERE COMPARABLE

		Incidence for 1,000 Persons					
		Disease			Deaths		
Groups	Total Number	Influenza	Acute Edema of Lungs	Pneumonia	Empyema	Acute Edema of Lungs	Pneumonia
Vaccinated 3 times	3,388	21	0.1	1.0	0.2	0	0.5
Not vaccinated....	9,388	200	0.5	12.0	0.6	0.4	5.5

incidence of disease and the number of deaths in almost all instances were lower in the vaccinated than in the unvaccinated group. The total average, as given in Table 9, compares favorably with that of the others. The death rate among the vaccinated is decidedly lower than among the unvaccinated.

The results given in the tables are in agreement with the numerous reports received by which it appeared that the vaccine had afforded striking instances of protection. In a few cases no protection seemed to be afforded, but in most of these the vaccinated persons contracted the disease a long time after the inoculations. It is fully realized how difficult it is to judge just how much protection was conferred in many of these instances, and how much of the apparent protection was merely coincidental. But a careful study of the reports from 303 physicians, some of which were the result of careful observation, forces the conviction that real protection, especially against pneumonia, was afforded. In some of these instances most of the observations were made within six weeks to two months after the vaccine was given.

It was thought that the injection of large doses of a mixed vaccine might have some effect on certain chronic infections, especially of the respiratory tract. A summary of the reports shows that 961 persons with chronic bronchitis were benefited and that thirty-eight were made worse. The reports show that 127 persons with chronic sinusitis were benefited and four made worse. Improvement was noted in 121 persons having myositis and in 129 with arthritis, while in one of the former and in twenty-two of the latter the symptoms were aggravated. These figures are not considered to be especially significant but worthy of record. They are in accord with our own observations.

RESULTS OF PROPHYLACTIC INOCULATION IN PREGNANCY

The results of vaccinations in pregnant women as reported in the questionnaires are summarized in Table 10. The incidence of disease and that of miscarriages and the mortality rate are consistently lower among those vaccinated than among those not vaccinated. The mortality (20 per cent.) of the unvaccinated pregnant women who developed influenza is somewhat lower than that reported from similar statistical studies by Bland[5] and by Harris.[6] They report a mortality of 37.7 per cent. and 27 per cent., respectively. The mortality of 12 per cent. in the 997 pregnant women inoculated in our series is in sharp contrast and calls for a further trial of this measure.

Almost from the beginning of the epidemic of influenza, patients who registered at the Mayo Clinic were advised to be vaccinated. From October 1 to May 1, 55,189 patients registered. Of these, 2,542 were vaccinated once, 1,030 twice, and 1,850 three times, a total of 5,422. A reliable morbidity and mortality rate for each thousand of the vaccinated and unvaccinated could not be determined because such a large percentage of patients remained in Rochester for too short a time.

It was thought that a study of the cases of influenza admitted to the hospitals might, however, be worth while. Of these, 749 were undoubted cases of influenza, and were analyzed from various standpoints. Fifty-nine of the patients were vaccinated once; twenty-four, twice, and fifty-seven, three times, while 609 were not vaccinated. The incidence of pneumonia and the deaths from pneumonia in these groups are

TABLE 10.—RESULTS OF PROPHYLACTIC INOCULATION IN PREGNACNY

		Incidence for 1,000 Persons									
		Disease					Deaths				
Groups	Total Number	Influenza	Acute Edema of Lungs	Pneumonia	Empyema	Miscarriage	Acute Edema of Lungs	Pneumonia	Empyema	Meningitis	Total Deaths	Mortality of Those Who Developed Influenza
Vaccinated 3 times	997	109.3	17.0	27.0	....	14.0	2.0	12.0	....	....	14.0	12 per cent.
Not vaccinated....	2,388	194.5	17.7	89.4	0.82	68.2	12.2	86.2	0.54	0.82	59.9	29 per cent.

recorded in Table 11. The average interval between the vaccinations and the onset of influenza was nine days in those vaccinated only once, twenty-six days in those vaccinated twice, and forty-five days in those vaccinated three times. The average temperature was more than one degree higher in the unvaccinated than in the vaccinated, and the average duration of fever nearly two days longer. The percentage incidence of pneumonia in those vaccinated three times was 21; in those not vaccinated, 57, while the percentage of deaths

TABLE 11.—RESULTS IN CASES OF INFLUENZA ADMITTED TO HOSPITALS IN ROCHESTER

Groups	Cases of Influenza	Incidence of Pneumonia	Deaths from Pneumonia, per Cent.
Vaccinated once	59	39	10
Vaccinated twice	24	96	12
Vaccinated three times	57	21	5
Not vaccinated	609	57	22

from pneumonia was 5 in the former group and 22 in the latter. The mortality from pneumonia of those vaccinated only once and those vaccinated twice is also well below that of the unvaccinated. The mortality figure in the unvaccinated is abnormally high because only the patients with relatively severe attacks were admitted to the hospitals.

5. Bland, P. B.: Influenza in Its Relation to Pregnancy and Labor, Am. J. Obst. 79:184-197 (Feb. 19) 1919.
6. Harris, J. W.: Influenza Occurring in Pregnant Women, J. A. M. A. 72:978-980 (April 5) 1919.

The greater tendency to the development of pneumonia in influenza among the unvaccinated group as observed in this series is in keeping with the lower incidence of this complication (4.7 per cent.) in 11,325 cases of influenza in which the vaccine was given after the onset of the symptoms, as compared with the incidence (8.7 per cent.) in 41,788 cases in which the vaccine was not used. The average mortality in the cases in which the vaccine was used in treatment was 1.4 per cent.; in those not treated it was 2.1 per cent.

From these results considerable weight may be attached to the opinion of nearly all the 430 physicians who have used the vaccine and who have reported on this point, an opinion in agreement with our own observations, that is, that the attacks of influenza if contracted following vaccination are milder and of shorter duration.

SUMMARY

The immunologic and animal experiments reported[7] elsewhere indicate that the mixed vaccine used by us contained the important bacteria as they occur in influenza and the accompanying pneumonia, and that a relatively large number of strains of the green-producing streptococci which appear to have a specific relationship to the initial attack were included. The reports included results obtained under the most varied conditions, from many communities covering a wide range of territory. In some communities the mortality rate was excessively high, in others comparatively low. The number of persons inoculated is sufficiently large to make the statistical figures fairly accurate. The period of observation was from three to seven months. The incidence of influenza and pneumonia as reported to us is probably far from exact, but the percentage of error should be about the same in the vaccinated and unvaccinated groups. Indeed, if a difference exists, the number of cases reported among the vaccinated might be expected to be proportionately higher because, even though no protection was promised, the fact that influenza occurred after the vaccinations were taken would naturally lead to a higher percentage of reports to the physician who gave the inoculations. The average incidence of influenza and pneumonia in the group inoculated three times is about one-third that of the uninoculated group.

The average mortality rate in the uninoculated, as reported to us, approximates the mortality rate (5.4 per cent.) of sixteen large cities of the United States as given in *Public Health Reports* for February 7. The average mortality rate in the group inoculated three times is about one-fifth that of the uninoculated. A definite although a smaller degree of protection appeared to be afforded to those who took only one or two inoculations. From a study of a series of hospital cases of influenza it is found that the tendency to the development of pneumonia in the vaccinated is about one third as great as among the unvaccinated, and that the mortality in the former is about one fifth as great as in the latter. The number of completed vaccinations in pregnant women is not large enough to give exact figures, but the results indicate clearly that a definite degree of protection was afforded in this group of individuals.

It appears from all the facts at hand that by the use of a properly prepared vaccine it is possible to rob influenza of some of its terrors.

The preliminary results from the use of more than 500 doses of this vaccine suspended in oil, the immunologic studies and the results from the use of pneumococcus lipovaccine reported by Fennel[8] and by Cecil and Vaughan[9] suggest strongly that both the degree of protection and the duration of the immunity may be materially increased by the use of lipovaccine over that reported in this paper from the use of the saline vaccine.

7. Rosenow, E. C.: The Experimental Production of Symptoms and Lesions Simulating Those of Influenza with Streptococci Isolated During the Present Epidemic, Study II, J. A. M. A. 72: 1604-1608 (May 31) 1919. The Occurrence of a Pandemic Strain of Streptococcus During the Pandemic of Influenza, Study III, ibid. pp. 1608-1609.

8. Fennel, E. A.: Prophylactic Inoculation Against Pneumonia, J. A. M. A. 71: 2115-2120 (Dec. 28) 1918.

9. Cecil, R. L., and Vaughan, H.: Results of Prophylactic Vaccination Against Pneumonia at Camp Wheeler, J. Exper. M. 30: 457-483 (June) 1919.

STATUS OF PROPHYLACTIC VACCINATION AGAINST INFLUENZA *

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When we consider the tragic experience through which the country and, indeed, the world, has passed during the last year, we realize that a great advance in preventive medicine would be made by the discovery of a prophylactic agent which would enable health authorities to control effectively epidemic influenza or the pneumonia that so often occurs as a complication. Perhaps at the outset it may be profitable to take stock of what we know about the etiology of influenza and the etiology and pathology of influenzal pneumonias.

OPINIONS AS TO ETIOLOGY OF INFLUENZA AND INFLUENZAL PNEUMONIA

Though the organism described by Pfeiffer in 1891 has long been known as the influenza bacillus, there really never has been convincing evidence of its relation to influenza, and the data that accumulated during the epidemic or epidemics here and abroad this past year have not contributed any confirmation to the view that this germ is the cause of the disease.

In this connection it should be borne in mind that it is quite possible that there are a number of organisms, varying greatly in pathogenicity, which are grouped under the name of Pfeiffer's bacillus. We have only to recall the great differences that exist in other groups, in which organisms having common cultural and morphological characteristics vary greatly in disease-producing properties, to realize that the rather vague limitations of what is called the influenza bacillus may cover a number of more or less closely related organisms.

French and English workers have claimed to have produced influenza by means of a filterable virus; this would, indeed, definitely eliminate Pfeiffer's bacillus; but we must bear in mind that attempts to produce the disease in man artificially in this country, by means of both filtered and unfiltered secretions, have in practically every instance been negative. Similar attempts by means of cultures of the so-called influenza bacillus have been negative.

* Read before the joint meeting of the Section on Pharmacology and Therapeutics, the Section on Pathology and Physiology and the Section on Preventive Medicine and Public Health at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

When we turn to the views on the etiology and pathology of influenzal pneumonia, we find a rather general opinion that the pneumonia is due to Pfeiffer's bacillus or to the secondary invasion by organisms of acknowledged pathogenicity, particularly the various types of pneumococci, the streptococci, especially those known as hemolytic, and, less commonly, Friedländer's pneumobacillus or the staphylococcus.

A few observers are inclined to the opinion that the original cause of the influenza, be it the influenza bacillus or another organism, is also an essential factor in the production of the pneumonia. This view would appear to be entitled to much respect, on account of the rather general opinion among pathologists that the pneumonia following influenza is generally of a type distinct from the pneumonias ordinarily encountered.

A number of interesting papers have appeared on the pathology of influenzal pneumonia, and a complete review of them would be valuable; but, for the present purpose, we may say that, in general, the pneumonias do not conform to those due to the organisms which are usually associated with pneumonia. Lack of definite areas of consolidation, the absence of the usual fibrinous pleural exudate, the extreme wetness of the lungs, and the blood-stained pleural fluid usually found bilaterally, in most cases serve to differentiate influenzal pneumonias from those ordinarily due to pneumococci, as lobar pneumonia. Emphasis is laid on this point because some workers have hoped that immunization against lobar pneumonia, which appears to be practicable, might prove of great value against influenzal pneumonia; but if the lung lesions of the two diseases are so different, one suspects there may be a material difference in etiology, and that this difference may be of such a nature as to make what appears to be a valuable prophylactic agent in one case of no use in the other.

Rosenow[1] calls especial attention to the fact that "the findings in the lungs, for example, in the so-called acute bronchopneumonia following influenza, are quite unique and are strikingly similar, irrespective of the species of microorganism present." This is quoted to emphasize the point that it is entirely possible that all of these lesions may be due to the primary cause of influenza, and that the various organisms which have been recognized in various cases and various places may really not reach even the dignity of secondary invaders, but may be looked on as leading a relatively saprophytic existence in the tissue damaged by the primary cause of influenza, whatever that may be. With this brief preliminary consideration of these important matters, let us consider the experience with prophylactic vaccination.

VACCINE FROM INFLUENZA BACILLUS AS A PROPHYLACTIC

In discussing this subject, we will give attention, first, to the results obtained from the use of a vaccine made from the influenza bacillus alone, or from other suspected etiologic agent, which aims, to be sure, to prevent the primary disease, and later to a review of the evidence with respect to vaccines which have been devised with the special object of preventing the development of pneumonia or of mitigating its severity.

A vaccine made from the influenza bacillus alone seems not to have appealed sufficiently to European workers to induce them to try it when the epidemic prevailed abroad. In this country, its use has been confined largely to New England. The early reports on this vaccine were very encouraging; figures were presented which, if taken at their face value, would convince any one of the efficiency of the agent; but, when these figures were submitted to careful analysis, much doubt remained as to whether the vaccine was of any service whatsoever. The chief source of error lay in the fact that the inoculations had been done during the progress of the epidemic, and that the case incidence among the vaccinated was compared with the case incidence in the general population or in the control groups from the beginning of the epidemic. Now, it is plain that if, after the epidemic is well under way, we vaccinate a portion of the persons in a population, the percentage of persons attacked will be smaller among the vaccinated than among the nonvaccinated, because a percentage of the total number of cases will have occurred before the vaccine is given. Not only does this introduce an error by counting in the control, or nonvaccinated group, cases that have occurred early, but also it leaves a select group to be vaccinated, wholly or in part, in which the percentage of susceptibles is smaller than in the original group of which they formed a part.

To make this clear, let us suppose that ten days after an epidemic started in a population of 1,000 persons, an admittedly worthless vaccine was administered to one half of those who at that time remained unattacked by the disease. Let us further assume that on the date of vaccination 20 per cent. of the population had sickened, leaving 800 well persons, of whom 400 were vaccinated. Since the hypothetical vaccine is worthless, the morbidity will be as great in the vaccinated as in the nonvaccinated group. Let us assume this to be an additional 20 per cent. Then the total morbidity in the vaccinated group will be 20 per cent. of 400, or eighty cases. The total morbidity in the unvaccinated, however, if we consider the entire period of the epidemic will be 20 per cent. of 1,000, or 200, plus 20 per cent. of 400, or eighty, which would make 280 cases.

Although the error is now sufficiently clear, we have seen reports which, on the basis of the above figures, if applied to this hypothetical worthless vaccine, make it appear to be a valuable prophylactic. The statement of these reports would be, in effect, that one half of the population was vaccinated, that among the vaccinated only eighty cases developed, while among the unvaccinated 280 cases appeared. Hence the obvious value of the vaccine.

We must also remember that a vaccine can scarcely be expected to exert any appreciable prophylactic effect before from seven to ten days after the vaccine is given, since a week or more is required for immunity to develop. A comparison is fair which considers, among both vaccinated and nonvaccinated, only cases that have occurred, say, ten days or more after the vaccinations are made.

When the influenza bacillus vaccine was submitted to such critical tests as the inoculation of approximately half of the individuals in institutions, or in other large groups, its failure became apparent. A few examples of this are worth citing. Hinton and Kane[2] were able to vaccinate about half of the patients at an epileptic

1. Rosenow, E. C.: Prophylactic Inoculation Against Respiratory Infections, J. A. M. A. 72: 31 (Jan. 4) 1919.

2. The Commonwealth, Bimonthly Bulletin, Massachusetts State Department of Health 61-28, Nos. 1 and 2, 1919.

colony long enough before the disease became prevalent in the institution to justify the drawing of conclusions from their data. The vaccine used contained 800,000,000 organisms per mil, and a total of 2,000,000,000 were administered to each person. The results were as shown in Table 1.

TABLE 1.—EFFECT OF INFLUENZA BACILLUS VACCINE AS A PROPHYLACTIC

	Vaccinated		Not Vaccinated (Controls)	
	No.	Per Cent.	No.	Per Cent.
Number of persons	461	....	518	....
Cases of influenza	163	35.4	178	34.3
Deaths	28	17.0	24	13.5

On the basis of this experiment the authors reach the obvious conclusion that the vaccine was without value.

A similar test was made on the naval personnel at Pelham Bay Training Station; here a part of the individuals of a group were vaccinated, the remainder being held as controls. According to the latest available report,[3] 9 per cent. of the 554 inoculated persons developed the disease, and 5 per cent. of the 800 who had not been inoculated developed it.

Similar failure attended the attempts at immunization of men at the naval base at Paris Island, S. C. It was definitely shown that neither incidence nor severity was influenced by the vaccination. These observations were all on groups large enough to make the deductions of value.

A number of controlled vaccinations, in which influenza bacillus vaccine was used, carried out in institutions by the Public Health Service, gave the rather paradoxical result of showing an increased percentage of attacks among the vaccinated, but more deaths among the nonvaccinated. This result was obtained with a vaccine directed against the primary disease, not against the complicating pneumonia. The results are shown in Table 2. These figures illustrate the fallacy of giving much weight to the results of a small set of observations in work of this sort.

TABLE 2.—RESULTS OBTAINED BY INFLUENZA BACILLUS VACCINE IN INSTITUTIONS

	Vaccinated		Not Vaccinated (Controls)	
	No.	Per Cent.	No.	Per Cent.
Number of persons	484	....	842	....
Cases of influenza	153	31.6	223	26.4
Deaths	0	....	4	1.8

VACCINES FROM STREPTOCOCCUS AND OTHER ORGANISMS

Another series of vaccinations aimed directly against the supposed causative agent was that reported by Ely, Lloyd, Hitchcock and Nickson.[4] These workers believed that the epidemic was due primarily to a hemolytic streptococcus which could be detected in the blood and in the lungs. From the fact that the organisms with which these observers worked soon lost their chain-forming properties and, in some instances, the power to hemolyze promptly, they express some doubt as to whether they should be classed as streptococci, and they further assume that there are material differences between different strains. The results of the use of a vaccine prepared from organisms isolated from the cases were apparently most encouraging, though none of the experiments was controlled in a manner that would definitely establish the value of the preparation. The work of these observers needs to be repeated before the results can be accepted for general application.

When we come to consider the evidence with respect to the vaccines especially designed to prevent the pneumonic complications of influenza, we find again such conflicting reports that one is somewhat bewildered.

The only papers from a foreign source that have come to my notice are those by Eyre and Lowe,[5] who used a mixed vaccine which contained the pneumococcus, the streptococcus, the influenza bacillus, *Staphylococcus aureus, Micrococcus catarrhalis, B. pneumoniae* and *B. septus.*

These authors believe, and indeed present rather convincing figures in their first paper[5] to prove their point, that the use of this vaccine produces lowered resistance, which may last for "from a few hours to two or three weeks," during which period the incidence of respiratory infections would be increased among inoculated groups.

The early experience of the English authors does not refer directly to the prophylaxis of influenza, but it is cited here to show that there may be an element of danger in the indiscriminate use of vaccines in the presence of a rapidly spreading epidemic like influenza in which naturally many persons in the "negative phase" would be attacked.

In a later paper,[6] the same writers report on the experience with vaccine in the epidemic in England in the autumn of 1918. Stress is laid on the necessity of preparing a vaccine from cultures but recently isolated.

The figures given and the facts presented by these writers are difficult of interpretation and permit of almost any conclusion that one wishes to draw from them, from the optimistic one that fatalities after influenza occur only among the nonvaccinated, to the pessimistic one that fatalities occur only among the vaccinated, though the authors believe the results were good. They frankly reiterate the opinion that for a short time following vaccination there is an increased incidence among the vaccinated, owing to temporarily increased susceptibility, but the writers consider that this risk is justified by the benefit that they believe may accrue later. As inoculations were performed largely during the prevalence of the epidemic, and as the controls appear to include persons who developed the disease prior to the vaccination, the alleged good results may be misleading.

THE POLYVALENT VACCINE OF ROSENOW

Rosenow[1] prepared a mixed, and, at least in part, polyvalent, vaccine from the various fixed types of pneumococci, pneumococci of Group IV, hemolytic streptococci, *Staphylococcus aureus* and the influenza bacillus, all of which had been recently isolated. This vaccine was adjusted to meet the bacterial flora encountered during the epidemic; thus, in a manner it may be said that it was designed to approach an autogenous vaccine, but was intended primarily for prophylactic purposes. Dr. Rosenow felt that this vaccine should be prepared for use in any community from the strains of organisms there prevailing, and that a vaccine adjusted to meet the needs of one local-

3. Notes on Preventive Medicine for Medical Officers, U. S. Navy bulletins, Nos. 50 and 51.
4. Ely, C. F.; Lloyd, B. J.; Hitchcock, C. D., and Nickson, D. H.: Influenza as Seen at the Puget Sound Navy Yard, J. A. M. A. 72:24 (Jan. 4) 1919.
5. Eyre and Lowe: Lancet 195:484-487.
6. Eyre and Lowe: Lancet 196:553-560.

ity might not meet those of another. The figures given for protection are encouraging, but do not lend themselves to critical analysis.

Dr. Rosenow considers the immunity produced by his vaccine to be of relatively slight duration, as some persons were apparently protected during the first wave of the epidemic, but not during the second.

A vaccine, prepared essentially in accordance with Dr. Rosenow's formula, was used extensively in the Middle West with alleged good results, but it was not used until the epidemic was at, or beyond, the crest, and the records are not convincing. Vaccine prepared in the manner suggested by Dr. Rosenow should theoretically have a better chance for success than those we shall next consider, but the practical difficulties of preparing it from locally prevailing strains and adjusting it to meet the changing flora of the respiratory tract in a disease that spreads as rapidly as influenza are obvious.

A specimen of the vaccine which was being used in Illinois was tried in California, under rigidly controlled conditions, without success. The disease did not appear in the institution where the test was made until eleven days after the last injection, but, after the epidemic had swept through it, the results revealed that 37 per cent. of the vaccinated were attacked, against 28 per cent. of the controls, while 4.5 per cent. of the vaccinated population died, against 3.6 per cent. of the nonvaccinated. These are differences too small to be significant. Tests made in other institutions gave similar results, though we need not take the time to consider the details here.

There are several other reports of the use of vaccines prepared somewhat along the lines of Dr. Rosenow's, but the data are not presented in a manner to permit of analysis.

The only report we have on a vaccine directed against the influenzal pneumonias associated with the fixed types of the pneumococcus is that of Cecil and Vaughan,[7] whose work was conducted at Camp Wheeler and was directed primarily against the usual pneumonias of the camp. Apparently the antipneumococcus vaccine reduced somewhat the incidence of influenzal pneumonia among the vaccinated, though, to use the author's words, "influenza causes a marked reduction in resistance to pneumonia even among vaccinated men." These authors show clearly that the case mortality of secondary pneumonias was not reduced by the vaccination, contrary to the claim so often made, that the vaccine, when it fails to protect perfectly, at least leads to a milder type of the disease. Cecil and Vaughan believe that the results of their experiment with respect to pneumococcus pneumonia were obscured by the influenza epidemic; evidence that the prophylactic action of the vaccine employed against influenza was not striking, since the epidemic should have served to emphasize rather than obscure the results of the beneficial action of a really valuable prophylactic agent.

We must next consider, briefly, the stock commercial vaccines made from about the same organisms that went into the vaccine prepared by Dr. Rosenow. Concerning these there are no accurate figures. So far as I have been able to determine, the preparations have not been used anywhere under properly controlled conditions. What we have to consider are, chiefly, the enthusiastic reports of observers whose faith was better developed than their judgment. A strenuous effort was made to secure the endorsement of the federal government for this form of prophylaxis against influenza. Under the direction of the Surgeon-General of the Public Health Service, careful investigators were sent to several communities from which glowing reports were received regarding the great value of stock vaccines, but in no case could the claims be verified. In this connection, we may trace the waning enthusiasm of one man who early in the epidemic reported that "immunization, using mixed vaccines, has proved beyond any question of doubt to be of great prophylactic value . . . why not extend this to all the people?" Ten days later, this man advised us that "we felt there was a strong possibility of it [the vaccine] preventing many cases. . . . At the present time we are not in a position to make any absolute and definite statement." So far as we know, the final reports from this source never have been published, though ample time has elapsed.

People wondered that those in positions of responsibility did not accept the first enthusiastic reports, adopt an attitude of optimism, and recommend the universal use of vaccination against influenza; but, in the light of present knowledge, there seems to have been some justification for an attitude of conservatism.

It must be clearly understood that what has been said above does not apply to vaccination against lobar pneumonia, using pneumococcus vaccine. The evidence on this is favorable, though perhaps the final word has not yet been said. It may be noted here that the very optimistic reports by Lister, who introduced vaccination against lobar pneumonia, are being called into question.[8] The rather startling suggestion is made by Fennel[9] that this antipneumococcus vaccine may be useful in combating epidemic influenza, but he admits the "information at hand is fragmentary and not to be seriously considered though possibly significant."

Though the evidence in respect to any vaccine that has been tried offers little to warrant hope that an effective agent has been found, we must not feel unduly pessimistic. The problem of vaccination in influenza is an extraordinarily difficult one. The etiology is uncertain, the influenza bacillus and the streptococci are poor antigens, and the epidemics are so far apart and so rapid in passage that the time to work out a prophylactic agent is very limited.

CONCLUSION

The general impression gained from uncontrolled use of vaccines is that they are of value in the prevention of influenza; but, in every case in which vaccines have been tried under perfectly controlled conditions, they have failed to influence in a definite manner either the morbidity or the mortality.

7. Cecil and Vaughan: J. Exper. M. **29**: No. 5, pp. 457-483.

8. Johnson: Am. Med. **38**: 149.

9. Fennel, E. A.: Prophylactic Inoculation Against Pneumonia, J. A. M. A. **71**: 2115 (Dec. 28) 1918.

Making a Skilled Physician.—Hippocrates named six conditions necessary to become a skilled physician: Natural talent, instruction by a competent master, a place favorable to study, education begun in youth, love of work and long application. The first of these conditions is the most important, for where there is not a natural disposition it is useless to attempt to force Nature. Theory should be combined with practice. Want of experience begets either timidity or rashness. Timidity discloses impotence and rashness ignorance.—Tweedy, *Brit. M. J.* **2**:598 (May 17), 1919.

GASTRIC CELL PRIMARY ATROPHY*

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Achylic conditions of the stomach may be divided into: (1) those in which it seems to be normal in the individual, has always been and will be present throughout the life of the person, and in whom it has not and most probably will not affect the general state of health or ever cause local symptoms; (2) the psychologic cases, such as fear of the passage of a stomach tube, or the effect of depressing emotions (worry, grief, anxiety, suspense); (3) reduced state of general body from fevers and senile conditions; (4) endocrinitic or hormone disturbances, of which we know little, and (5) pathologic conditions of the stomach glandularis in which the secreting ability is destroyed by disease of the essential elements, namely, the acid and central cells.

To the latter, the term atrophic gastritis should be given, a far better term for it than to designate it as achylia gastrica, because it expresses pathology instead of only a symptom. In no entity of medicine are more mistakes made than in instances of atrophic gastritis, when they are called achylia gastrica. The latter term should be confined to the normal nonacid stomachs, which, for some reason, have acquired symptoms, to the psychologic endocrine, the general vitality reduction and the senile cases. In my opinion, almost every instance of so-called gastrogenic diarrhea with persistent achylia, whether increased amounts of mucus are present in the stomach or not, should be viewed most probably as an atrophic gastritis. Expressions in terms of symptoms may be satisfactory to some, but they do not meet one of the cardinal commandments of scientific medicine as do expressions in terms of pathology.

Pathologic studies of the stomach glandularis on the cadaver and such specimens as were obtainable at operation were made to study gastric cells. The observations were that in the atrophic and hypertrophic types of chronic gastritis there is generally presented in the glandulature the characteristic picture of a cell atrophy, but this comes very probably in a secondary way from interference with the nutrition of the cell, due to contraction of fibrous tissue, low intratubular and subtubular in location. In primary cell change the atrophy seems to begin as a process in the cell protoplasm, and is apparently not secondary to change in the basement membrane, nor is there accompanying it any significant round cell infiltration or organization of fibrous tissue. The fibrous tissue formation may be and often is met with; but then it is present as an entity making up a chronic gastritis. The commonest and the most perfect instances of cell atrophy come and develop without any evidence of chronic inflammation, and are represented in a granular degeneration of the cell body and desquamation which goes on until the cells disappear. Whatever the degree met with, the process is general throughout the entire organ, although in the pyloric region the so-called pyloric glands usually escape. Thus it is apparent that the old designations of atrophic gastritis should be retained; but as a designation it should be confined to the late stage of chronic gastritis in which round cell and fibrous tissue infiltration and others are primary factors, and then there is reason to consider it as a form of stomach disorder, a granular protoplasmic degeneration, which really is not a true gastritis at all.

Work was done if possible to elucidate a factor or factors in the production of this condition. For the purpose, fourteen cadavers in which this stomach condition was found to be present were carefully studied. These were all instances of death from chronic infections: Eight were instances of tuberculosis in which mixed infection existed. Two were instances of chronic septic conditions of the gallbladder resulting in rupture and general peritonitis. One was a grampositive diplococcus systemic infection following four years after a pneumonia in which a large abdominal abscess occurred. Another was meningitis following long standing ethmoidal disease. Still another was systemic infection following a pyelonephritis of three years' standing, and the last, a suppurative endocarditis of low degree.

In addition to these, there were nine instances of operations on chronic septic conditions in which pieces of stomach glandularis were obtained for section. They comprised four instances of subacute suppurative cholecystitis, three instances of long standing appendicular disease with mass adhesions, a suppurative Meckel's diverticulum, and a perforated gastric ulcer with local abscess formation and a chronic sinus between the abscess sac and stomach cavity.

LOCATION OF CHRONIC INFECTIONS PRESENT

Found		36
	Head	10
	Chest	9
	Abdomen	15
	Pelvis	2
Not found		4

As a result of these studies it was suggested that in infections of long enough standing in the body, a degeneration of gastric secreting cells could occur either from toxic effects from the bacteria affecting the cell protoplasm from the systemic side, the stomach acting as an emunctory organ to those toxins, or that because infective organisms were found in the stomach tissues in all cases but one, free in very increasing numbers in the stomach cavity and outside the stomach, this stomach condition was directly bacterial in origin.

From this point, the studies were changed to routine clinical cases. In all the anachlorhydric cases seen, care was exercised to eliminate the congenital, psychologic, the conditions in persons who had recently recovered from marked acute infections, and the senile. Also thrown out were instances of chronic alcoholism, cases in which we could feel that the anachlorhydric condition might have been due to dietetic errors, and those in which the condition could be ascribed to local causes in which a chronic gastritis was probably present. There were many instances by the most careful analyses of which we could not be definite as to classification that were not included. Each case was examined by Ewald test meal and the fractional method alternately four times before being judged as anachlorhydric, and classified according to the stomach condition most probably present. In the final analysis there were forty in which true cellular atrophy

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was believed to exist, instances of people who at some time before were reported to have normal acid present in the stomach which was now definitely absent. Regarding these the focal infections shown in the accompanying table were present.

Of the head cases only pyogenic sinus conditions, badly diseased tonsils and distinct pyorrhea were considered significant. Chronic middle ear conditions and tooth apex infections were not included unless one or more of the former mentioned conditions also existed. The chest series were all tuberculosis with mixed infections in moderately advanced cases; and of the abdomen, the gallbladder, appendix, colon, renal, female pelvic organs and prostate disease made up the group. Other than the chest cases, infections were proved by operation in only two instances, and in these, infection was believed to be present. In the four nonseptic cases all means of examination could not prove the presence of focal infection. These cases of primary gastric cell atrophy with chronic focal infections were striking. In them it was noted that this stomach condition was more liable to occur because of the infection than could be proved in any other stomach entity. It, therefore, was believed that cause and effect were practical enough to be significant for presentation at this time and worthy of further study.

The stomach retains few bacteria that must enter it. It is supposed that persistence of acidity is inimical to their development. My observations suggest that the acidity is not so significant a factor in this as is the status of motility. Moreover, the acid factor is only significant with the simple fermentation organisms, for with the pathogenic types, such as the bacilli of the coli group, staphylococci and the various forms of streptococci, it is not. Perfect examples for the observation of this are found in hypersecretion continua (the so-called Reichmann's disease) and gastritis acida. In these the acid secretion is high enough to inhibit an increased bacterial flora; still, in the majority of instances it does not do it. In perfect examples of these, both the bacteria and the leukocytes are increased, proving that there is pathology in the stomach mucosa, and that the normal acid does not inhibit the bacteria when local pathology is present. An argument may be made that in stagnant and achylic stomachs, like those seen in late cancer, the bacterial content in the stomach is high, but the bacteria met with here are only the fermentative and not the pathogenic forms. These organisms, then, are accidental, or better, secondary. A further argument might be made that stomachs which empty practically, even though a little slower, do not contain nutritive substance containing nitrogen and carbon for bacterial growth. Our observations have been that the stomach is rarely empty of every vestige of food. Even in normal stomachs a few meat shreds, starch granules, and mucus may be met with as late as seven or eight hours after meals. From these, but more especially in the stomach tissue, the bacteria derive sustenance for growth, and the more pathologic their nature, the surer is it that organic tissue gives to them the essentials for their livelihood.

Work was done on those patients that had been operated on to delineate an identical infection. This failed because of the multiplicity of bacteria met with in the focal infections and the stomach contents. In practically all of the cases it was not possible to decide which biologic type or strain was associated in causative ways, but the organisms of the streptococcic and bacillic classes occurred conspicuously in the focal infection and in gastric contents. Bacterial studies of test meals were made in the other anachlorhydric cases, and in those of normal and increased acidities. Standards of numbers of organisms per cubic centimeter of unfiltered test meals and gram-differential kinds were established, and it was found that in acid stomachs the bacteriology was nearly identical, depending somewhat on the status of motility. In the simple anachlorhydric cases more bacteria of the fermentative kinds were encountered, and in the noninfective and nonatrophic cases they were not pathogenic in kinds. In atrophic gastritis and the senile cases, the content was higher and tended to gram-negative pictures; but in the true or primary atrophies the content had distinct pictures in which large amounts of organisms, mostly the staphylococci, streptococci and streptobacilli, often actively motile, occurred as distinctive findings. So suggestive was this that diagnosis of this type of cellular atrophy in the stomach was being made by bacteria count and the study of stained specimens of test meals alone. Grown from different specimens of these test meals were *B. coli*, *B. proteus*, bacillus of malignant edema, staphylococci and various streptococci, pneumococci and the Connellan-King diplococcus. A gram-negative organism, streptobacillus in type, and grown best in 2 per cent. glucose bouillon, in some instances seems to have special significance.

In the cases of twenty-nine of the patients that were operated on, examinations of test meals were made one month and longer after operation, but no beneficial change in the bacterial pictures or acid content was noted. These and the four in which a focal infection could not be established were treated by vaccines according to the bacteria as they occurred conspicuously in the stomach contents of the individual case. In these twenty-three cases, fourth day injections, beginning with twenty-five million and rapidly increasing according to local and general reactions, were tried for twenty doses, the last being well into the billions, sometimes as high as 6. No benefit locally from the vaccines could be demonstrated. The patients that were operated on were benefited, but this was probably not local in the stomach, and no doubt was only such as came from the operations benefiting the general body. These patients were then tried on lactofarinaceous diet, with large doses of alkalis and pancreas preparations, and daily lavage. On this plan of treatment improvement was noted, not only in the subjective stomach symptoms but generally as well, and represents, in my opinion, the best means of treatment.

SUGGESTIONS

Some one, a wise and observing biologist, I assume, has remarked that when any one talks of causation he hangs out a signal to the discerning that he has made an incomplete analysis. This philosophical criticism finds no field richer in examples than that of medicine. Alhough I have been at this work for three years, I really have no definite conclusions; instead I offer only suggestions in the hope of stimulating interest and further sudy, and these may be thus expressed:

1. Pathologic studies suggest that essential cell atrophy in the stomach is quite a common condition.

2. Cellular atrophy can be a true primary atrophy; and these instances should be distinguished from the forms secondary to chronic gastritis.

3. In primary cell atrophy the destruction is, in all probability, due to toxic effects from focal infections gaining lodgment in the spongy glandularis, or from bacteria culturizing in the stomach glandularis or stomach contents.

4. The bacterial studies of test meals are important in this connection, the organisms, particularly when actively motile in the test meals, being significant.

5. Distinction should be made between the pathogenic and fermentative organisms in test meals, not only because of an explanation of the achylia, but because of the suggestion that focal infection probably exists somewhere in the body.

6. Vaccines made from test meals are of no benefit in the cases, either subjectively or objectively, the removal of the focal infection being more important for benefit to the subjective stomach symptoms as well as to the body in general.

7. With the subjective stomach symptoms alone, the old method of treatment with gastric lavage as an addition to the lactofarinaceous diet and alkalis and pancreas preparations proved to be the best treatment, although in no case was there any return of normal acid or proenzymes.

8. When primary cell atrophy has taken place, the loss of gastric juice secretion is as permanent as when the atrophy is secondary to a chronic gastritis.

GASTRO-INTESTINAL DISTURBANCES IN PERNICIOUS ANEMIA*

FURTHER OBSERVATIONS

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The relation existing between anemia and various gastric affections has been a matter of great interest for many years. As early as 1860, Austin Flint[1] called attention to the possible dependence of certain cases of pernicious anemia on certain degenerative changes in the gastric mucosa. In 1865, Samuel Fenwick[2] published a memoir on "Morbid Changes in the Stomach and Intestinal Villi Present in Persons Who Have Died of Cancer" in which he observed the disappearance of the cells in the gastric tubules, granular and fatty degeneration and atrophy, and an increased formation of connective tissue with a marked thinning of the mucous membrane, and with loss of flesh. Especially did this condition occur in persons dying with cancer of the breast. He explained the anemia accompanying this disease as possibly due to the changes in the gastric tubules of the stomach.

In 1875, Schumann[3] described a case of progressive pernicious anemia in which the gastric mucous membrane was almost completely denuded of its epithelium and the gastric glands were poorly developed and insignificant in number; mucous hemorrhages, increase of connective tissue and fatty degeneration of the muscularis and of the blood vessels were observed.

In 1877, Fenwick[4] reported four cases of pernicious anemia in which atrophy of the gastric tubules was observed. Later, Nolen[5] reported two cases of a similar condition; Quincke,[6] one case; Nothnagel,[7] one case; Brabazon,[8] one case; Henry and Osler,[9] one case, and Kinnicutt,[10] two cases.

The opinion was held by these observers "that a primary atrophy of the gastric mucous membrane occurs and that in this lesion is to be found an explanation of certain cases of pernicious anemia." The reason for this conclusion is evident. The entire degeneration of the glandular elements of the stomach, together with the loss of secretion, appeared sufficient to explain the condition of the blood. It was noted, however, that an entire absence of gastric secretion could exist for a long period of time without impairing the general health of the patient. It is, therefore, impossible to conclude that gastric atrophy causes pernicious anemia; and the two conditions must be classified as a result of a common cause. Grawitz[11] has advocated the gastro-intestinal theory as the cause of pernicious anemia, believing this condition to be due to an intoxication. He is inclined to lay great stress on the achylia gastrica which is so commonly present in this affection. The objection to this theory is founded on the fact that achylia may be present for years without producing anemia; it is frequently present in other conditions, for instance, in malignant affections, or as a result of intestinal parasitic infections. Oestreich and Strauss[12] call attention to the histologic change observed in the mucous membrane of the stomach and intestine, occurring with much constancy in pernicious anemia, to which they attach much importance. The changes consist mainly of an atrophy of the glandular structures, and an accumulation of leukocytes in the submucosa. Notwithstanding the fact that the histologic changes show an apparent relation existing between the gastro-intestinal tract and the blood disease, they could not demonstrate a destruction of the blood by a poison generated by ordinary putrefaction in the intestine.

Following these observations, Martius[13] and others studied the alterations in the intestinal mucosa in pernicious anemia. A marked thinning in the muscularis and submucosa was observed, and this condition was found in all sections from the duodenum to the colon. The microscopic examination showed an overgrowth of the interglandular tissue in the mucous membrane of the intestine, there being a richness in round cells in the early stages and poorness in cells, with fibrous formation in the later stages. The further the advance of the disease, the greater the compression in the glandular part. Bloch[14] has published some experiments bearing on the etiology of pernicious anemia. Extracts prepared from the intestinal contents of patients in different stages of the disease were injected into animals without, however, producing any charac-

* Read before the Section on Gastro-Enterology and Proctology at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

1. Flint, A.: Med. Times, Sept. 15, 1860.
2. Fenwick, Samuel: Med. Chir. Tr. 48.
3. Schumann: Inaug. Diss., Freiburg, 1875.
4. Fenwick: Lancet 2, 1877.
5. Nolen: Centralbl. f. d. med. Wissensch. 20.
6. Quincke: Samml. klin. Vortr. No. 100.
7. Nothnagel: Deutsch. Arch. f. klin. Med. 24.
8. Brabazon: Brit. M. J., July 27, 1878.
9. Henry and Osler: Am. J. M. Sc. April, 1886.
10. Kinnicutt: Am. J. M. Sc., October, 1887.
11. Grawitz: Berl. klin. Wchnschr., June 7, 1901.
12. Oestreich, R., and Strauss, H.: Berl. klin. Wchnschr. 44: 1300-1302 (Oct. 14) 1907.
13. Martius and Lubarsch: Achylia Gastrica, 1897.
14. Bloch: Deutsch. Arch. f. klin. Med. 87.

teristic symptoms from which definite conclusions as to the etiology of this affection could be reached.

Strauss[15] also concluded that since neither ordinary nor artificial constipation is capable of producing the symptoms of pernicious anemia, the hemolytic agent, therefore, which produces the destruction of the blood cells in anemia must depend on some special change not present in ordinary putrefaction. Tixier[16] describes the relation existing between gastro-intestinal disturbances and anemia and points to the slight alteration found in the gastro-intestinal canal in patients dying from anemia associated with intestinal conditions. He maintains that the blood changes in these cases must be explained by the formation in the intestine of a poison having both the power of destroying the red corpuscles and that of stimulating the blood forming organs. The latter power is at times exhausted while the hemolytic power is still active. Moffitt[17] has suggested a protozoan infection as the cause of pernicious anemia.

It would carry us too far to draw attention to all of the various gastro-intestinal findings which have been observed in pernicious anemia by various observers. We need only call attention to the increase in eosinophil cells found by Lubarsch[18] in the interstitial tissue of the gastric mucosa in all cases. On the other hand, Jurgens[18] called attention to a degeneration of the motor nerve elements of the intestine, which Blaschko[19] described as an extreme degeneration of both Auerbach's and Meissner's plexus. From these findings it was concluded that in certain cases of pernicious anemia the primary cause is to be found in the destruction of the nerve elements of the intestine leading to functional disturbances and finally anemia. The evidence for this conclusion is, however, extremely insufficient.

The gastric secretion has been studied in pernicious anemia by a number of observers: H. H. Strauss[20] found free hydrochloric acid present but twice in a study of eight cases; and in twenty cases of Rosenquist, four cases of Moracewski, and in eight cases of Strauss free hydrochloric acid could be detected in but 16 per cent. of the cases. Bloch observed that in the stage of improvement in pernicious anemia there is an increase of free hydrochloric acid; while Schumann[21] found an absence of this acid even when patients had apparently recovered from the disease for over two years.

In a study of twenty-four cases of pernicious anemia, Stockton[22] observed that eighteen patients were affected with gastric disturbances; while six were free of such disturbances, ten were constipated, eight had diarrhea, and in six there was an irregularity of the bowels. In eleven instances the liver was enlarged; in thirteen it was not; nine cases showed a dilatation of the stomach. In thirteen instances there was an absence of gastric digestion, in eight the gastric digestion was diminished, and in three it was fairly good. Five cases showed evidence of gastric catarrh. In six instances there was an absence of acid in the gastric contents, while the average of the total acidity varied around 1:10. In three cases free hydrochloric acid was present in traces; in all others it was absent.

Austin[23] found an absence of free hydrochloric acid and of the ferments in his cases, while the gastric motility was diminished in most instances. He also noted an increase of urobilin in the urine and of stercobilin in the feces; occult blood was also observed in the feces. Of the seventy-nine cases observed by Cabot,[24] only one presented hydrochloric acid in the stomach contents in any considerable quantity.

GASTRO-INTESTINAL SYMPTOMS OF THE SEVENTY-SIX CASES OF PERNICIOUS ANEMIA*

Number	Name	Age	Sex	Anorexia	Nausea	Vomiting	Indigestion	Bowels	Acidity Total HCl	Acidity Free Hydrochloric Acid
1	T. F.	51	♂	+	+	+	−	Diarrhea	12	0
2	E. R.	47	♂	−	−	−	+	Constipated	10	0
3	K. K.	38	♂	+	+	−	+	Diarrhea	11	0
4	P. G.	60	♂	+	+	−	−	Constipated		
5	T. N.	45	♂	+	+	+	+	Irregular	8	0
6	F. C.	42	♂	−	−	+	+	Diarrhea	9	0
7	B. J.	62	♂	+	+	+	+	Irregular	23	5
8	T. M.	57	♂	−	−	−	+	Constipated	14	0
9	S. K.	42	♂	+	+	−	+	Irregular	13	0
10	D. V.	59	♂	−	−	−	−	Constipated	56	39
11	L. J.	60	♂	+	+	+	+	Irregular	9	0
12	B. W.	58	♂	−	−	−	−	Diarrhea	8	0
13	P. S.	46	♂	−	−	−	+	Constipated	22	5
14	G. M.	39	♂	−	−	−	−	Constipated		
15	H. B.	47	♂	+	+	+	−	Constipated	32	12
16	S. S.	56	♂	+	+	+	−	Constipated	12	0
17	T. J.	59	♂	+	+	+	+	Constipated	14	0
18	M. L.	43	♂	+	+	+	+	Constipated	8	0
19	S. A.	50	♂	+	+	+	+	Constipated	9	0
20	J. P.	33	♀	+	+	+	+	Constipated	26	8
21	P. S.	49	♂	−	+	−	+	Diarrhea	9	0
22	C. M.	51	♂	+	+	−	+	Diarrhea	34	12
23	L. K.	50	♂	−	−	−	−	Constipated		
24	F. E.	58	♂	+	−	−	+	Diarrhea	30	0
25	H. B.	42	♂	+	+	−	+	Irregular	8	0
26	F. C.	37	♂	−	−	−	−	Constipated		
27	E. M.	44	♂	+	+	−	+	Irregular	25	8
28	T. B.	36	♀	+	+	−	+	Constipated		
29	F. N.	52	♀	+	+	−	+	Diarrhea		
30	K. P.	49	♀	+	+	−	+	Irregular	41	6
31	T. M.	60	♂	+	−	−	+	Constipated		
32	A. F.	56	♂	+	+	−	−	Constipated	14	0
33	E. C.	31	♀	+	+	−	+	Constipated	11	0
34	F. K.	37	♂	−	−	+	−	Diarrhea	12	0
35	C. L.	45	♂	+	+	−	−	Irregular	65	44
36	K. P.	40	♂	−	−	+	+	Constipated	9	0
37	P. C.	26	♀	+	+	+	−	Diarrhea	8	0
38	H. T.	51	♀	+	−	−	−	Constipated	8	0
39	F. D.	34	♀	+	−	−	−	Irregular	8	0
40	P. K.	49	♂	+	−	−	−	Constipated		
41	G. B.	53	♂	+	+	−	−	Irregular	11	0
42	A. M.	47	♂	+	−	−	+	Diarrhea	9	0
43	C. F.	60	♂	−	−	−	+	Constipated	13	0
44	E. F.	40	♂	+	+	+	+	Diarrhea		
45	N. R.	38	♂	+	−	−	+	Diarrhea	46	35
46	K. O.	51	♂	−	−	−	+	Constipated		
47	W. E.	49	♂	+	+	−	+	Diarrhea	44	22
48	P. L.	47	♂	+	+	−	−	Constipated	11	0
49	L. T.	53	♂	+	+	−	+	Diarrhea		
50	R. F.	57	♂	+	+	+	−	Constipated	9	0
51	H. A.	38	♂	−	−	−	+	Diarrhea		
52	S. P.	42	♂	+	−	−	+	Irregular		
53	T. B.	30	♀	+	−	+	−	Diarrhea	10	0
54	P. E.	55	♂	−	−	−	+	Constipated	38	10
55	T. L.	42	♂	+	+	−	+	Diarrhea		
56	K. A.	61	♂	+	−	−	+	Diarrhea	24	5
57	N. S.	60	♂	−	−	−	+	Diarrhea		
58	O. J.	57	♂	+	+	+	−	Constipated	14	0
59	M. R.	58	♂	−	−	−	+	Irregular	5	0
60	P. M.	39	♂	−	−	−	−	Irregular	10	0
61	O. L.	42	♂	−	+	+	+	Diarrhea		
62	E. P.	51	♂	+	+	+	+	Constipated	25	10
63	F. R.	47	♂	+	+	+	−	Diarrhea	9	0
64	D. I.	39	♂	+	+	+	−	Constipated	18	0
65	C. H.	50	♂	+	+	+	+	Diarrhea	10	0
66	T. S.	35	♀	+	−	−	+	Constipated		
67	N. O.	46	♂	−	−	−	+	Diarrhea	14	0
68	P. K.	49	♂	+	+	+	+	Diarrhea		
69	I. B.	37	♂	−	−	+	+	Constipated	5	0
70	M. A.	42	♂	−	+	+	−	Constipated	12	0
71	B. R.	44	♂	+	−	−	−	Irregular		
72	L. B.	47	♀	+	+	−	+	Constipated	9	0
73	M. L.	65	♂	+	−	−	−	Diarrhea	26	0
74	J. C.	54	♂	+	+	−	+	Diarrhea	16	0
75	A. W.	50	♀	−	+	+	+	Constipated	8	0
76	C. N.	48	♂	+	−	−	+	Constipated	12	0

* In the fourth column ♂ means male and ♀ female; in the fifth, sixth, seventh and eighth columns, + means present, and − absent.

15. Strauss, H.: Berl. klin. Wchnschr., 1902.
16. Tixier: Semaine méd., June 19, 1907.
17. Moffitt: Tr. Am. Phys., 1911, p. 288.
18. Jurgens: Verhandl. Berl. med. Gesellschaft, 1880-1881.
19. Blaschko: Virchows Arch. f. path. Anat. Bd. 94, 1883.
20. Strauss, H. H.: von Noorden Handbuch der Path. 1: 926.
21. Schumann: Zur Kenntniss der Anaemia, 1894.
22. Stockton, C. G.: Pernicious Anemia and Its Relation to Gastric Digestion, Based on Twenty-Five Cases, J. A. M. A. 43: 165 (July 16) 1904.
23. Austin, A. E.: Boston M. & S. J. 165: 128-132 (July 27) 1911.
24. Cabot: Osler and McCrae's Modern Medicine 4: 627.

In 1912, one of us[25] presented a series of fifty-eight cases of pernicious anemia in all of which gastro-intestinal symptoms were noted. Since then we have collected eighteen additional instances, making seventy-six in all. Of the seventy-six cases there were sixty-four males and twelve females, the ages ranging between 30 and 65 years.

The symptoms manifested were loss of appetite, nausea, vomiting, indigestion (fulness, pressure, distention, pain), diarrhea and constipation.

Loss of appetite was observed in forty-seven cases, nausea in thirty-seven, vomiting in twenty-six, indigestion in forty-six, diarrhea in twenty-eight, constipation in thirty-five, and irregularity of the bowels in thirteen. The liver was enlarged in twenty-four instances, while in fifty-two it was not. Enteroptosis was present in twenty-eight instances and atony of the stomach in thirty-four. Gastric catarrh was present in eleven cases. The gastric contents were examined in fifty-seven of the seventy-six cases. In forty-two of these there was an absence of gastric secretion (achylia gastrica). In eleven the gastric secretion was diminished and in four it was normal. In the forty-two cases with an absence of gastric secretion, the total acidity ranged between 5 and 16. In the eleven with diminished gastric secretion, the total acidity ranged between 18 and 41, free hydrochloric acid between 5 and 12. In the four with normal digestion the total acidity ranged between 44 and 65, free hydrochloric acid between 32 and 44. The gastric secretion was examined in eleven patients presenting an absence of free hydrochloric acid during the period of improvement in the state of the blood as well as of the general health; in none did the secretion return during the stage of apparent recovery.

We have also examined six cases of pernicious anemia according to the Rehfuss method of fractional analysis. There was in all a low total acidity ranging between 10 and 15 with an entire absence of free hydrochloric acid in every stage of the digestion. The Wolff-Junghans test always presented low protein values, thus differentiating this condition from gastric cancer.

From a study of the seventy-six cases of pernicious anemia, it is evident that a large proportion of these cases are attended with gastro-intestinal disturbances as well as with an absence of gastric secretion; there is present an achylia gastrica in about 74 per cent. of the cases, and even in the stage of apparent recovery the gastric secretion does not return. In a smaller proportion of cases, 19 per cent., there is a marked diminution of the secretion, and in a few instances, about 7 per cent., it remains normal.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. BASSLER AND DRS. FRIEDENWALD AND MORRISON

DR. MAX EINHORN, New York: Everybody knows that atrophy of the glands of the stomach exists, but it is very difficult in treating a patient to make a pathologic diagnosis. We also know that when extreme atrophy exists the prognosis is bad; while if there are only minute changes in the glands, usually a good prognosis may be made. When these studies of pernicious anemia were started by Fenwick, he had to deal with atrophy of the mucous glands of the stomach, and he said all those people had to die; and then people who studied the gastric secretion and found that there was no gastric secretion, said: "Now, here there must be an atrophy of the glands, and all those must die." When I started studying medicine and found a young man who had no gastric secretion, I could not convince myself that he had atrophy of the stomach. That is the reason I protested against this promiscuous diagnosis. I termed that condition "achylia gastrica." That young man is alive yet, after more than thirty years. I have seen a great many of those cases since. So, while it is very wise and good to try and make a pathologic diagnosis, if you can do it, do it, but do not make a pathologic diagnosis when you are not sure, and make a bad prognosis when the prognosis may be good. With regard to this treatment of anemia, which Dr. Friedenwald brought out. It was agreed that in all of these cases there was no gastric secretion. Later on, when I studied that subject I found exceptions to the rule. I found some cases of pernicious anemia and most of them had real achylia, but there was a fraction that had genuine gastric secretion, indicating again that lack of gastric secretion is not the cause of pernicious anemia, perhaps quite the reverse.

DR. ARTHUR F. CHACE, New York: These two papers might have been labeled focal infection of the streptococcic type, as it involves the stomach and interferes with the digestive system, thus producing anemia. If we looked at the primary condition as one of infection that involved two different parts of the body, the alimentary tract and the hemopoietic system, it will clear up the atmosphere a great deal Our attack in treating these conditions is along those lines. First, we eradicate the focus of infection; second, we improve the nutrition by treating the gastro-enteric tract. In anemia the improvements have been due to systematic treatment with hydrochloric acid, forcing alimentation, transfusion and by breaking up the patient's vicious cycle in the intestinal tract.

DR. MARTIN REHFUSS, Philadelphia: I believe that we not only have focal infections as the causes of gastric disturbances, but that we can have a focal infection of the stomach itself. It is astonishing to note that the stomach is not frequently infected, because, first, the material is usually in movement; second, because there is acid enough from the gastric mucous membrane; third, because the gastric mucous membrane is vascular; and, fourth, probably because there is always free draining from the mucous membrane. A very interesting thing I investigated some time ago was the number of bacteria in the gastric contents. I found the easiest way to determine that was by microscopic inspection of the "Howard" test meals, following the ingestion of starch, etc. In the ordinary test meal with forty-five or fifty total acidity, there is an occasional organism of this type. A lower type of acidity in which there is a distinct decrease in the organism is also found. In a third group in which there is considerable progress in starchy digestion, and with it a large number of organisms of the same type, mucus, pus cells and bacteria are in the stomach contents. The interesting this is this: At the height of the curve very little was found; at the bottom of the curve considerable material was found. There is a difference also in the character of that material. If you remove the material from the stomach in the morning you will find that in a true case of chronic gastritis in which the trouble is localized, there are bacteria, leukocytes and pus. You will find from mouth infection, throat infection and pulmonary infection distinct particles of pus like threads which float through the mucus. I have succeeded in three instances in isolating the organism from the stomach, preparing a toxin or vaccine, disinfecting the stomach and seeing the case clear up absolutely simply from purely specific treatment. I believe there is a focal infection of the stomach that exists as a specific cause of disease; second, this focal infection can be diagnosed; and, third, in some instances, at least, it is controllable. In these cases that are attended with considerable mucus, and sometimes with mucopus, and even in gastric cancer when the stomach becomes secondarily infected, I put the tube in and attach to it a rectal drip and allow that to drop disinfecting material over the stomach for a time. It certainly improves these cancer cases by keeping the stomach right. We have as much reason to keep an internal carcinoma clean as to keep an external carcinoma clean.

25. Friedenwald, Julius: Boston M. & S. J. 167: 160-162 (Aug. 1) 1912.

DR. LOUIS LEFRAK, New York: The chief clinical interest in atrophy of the gastric cells is the differentiation of the achylia which is usually present, from other conditions in which gastric secretions are also deficient or lacking. Cancer, neurasthenia and pure achylia, if there is such a thing, are to be differentiated. An absence of all the gastric ferments, including proenzymes, certainly points toward destruction of gastric cells. While from the standpoint of pathology atrophy of the gastric cells should be viewed with concern, still, I am sure, many of you have, like myself, seen cases in which gastric analysis showed a very low total acidity, absence of HCl, free or combined, with very poor result of rennin test and an almost negative Hammerschlag test for pepsin, and, despite all of which, the ungrateful patient refuses to be real sick. The possible compensating factors are increased motor activity and vicarious pancreatic and intestinal function.

DR. JOHN A. LICHTY, Pittsburgh: In the clinic with which I am connected, we have refused to make a diagnosis of pernicious anemia where we have no achylia. We feel from year to year as we hold to this rule that we are making fewer mistakes in the diagnoses. In other words, in those patients in which we even find satisfactory roentgen-ray examination and find free HCl still present, or even the combined HCl we usually find the patient takes a different course from the ordinary cases of pernicious anemia. I feel that Dr. Friedenwald has given us a very valuable paper in that it shows that a case of pernicious anemia or so-called pernicious anemia with a certain amount of free HCl or combined HCl is a questionable case; and if the case is followed to the necropsy table it will usually be found that some definite pathology is present.

DR. G. A. FRIEDMAN, New York: I believe that achylia gastrica at the very beginning must be a functional disturbance, similar to diabetes which is at first a functional disorder of the Langerhans islets of the pancreas. The next step may be actual pathology; atrophy of the glands of the gastric mucosa in achylia; atrophy of the Langerhans islets of the pancreas in diabetes. When achylia gastrica has firmly established itself, all kinds of infection may set in into the stomach. It is known that the possibility of becoming infected with Asiatic cholera is slight as long as the gastric secretion is normal; and it happens very frequently that individuals will contract cholera while attending cholera patients when on a fasting stomach. What I wish to point out is that achylia predisposes to invasion of the stomach by bacteria, but is not caused primarily by infection. In regard to the connection of pernicious anemia to achylia, I agree with Dr. Einhorn that pernicious anemia possibly causes the achylia. Of a similar origin the achylia in carcinoma of the stomach is probable, because we believe now that pernicious anemia is a malignant blood condition. Thus the essential achylia gastrica is primarily due to a functional disturbance, while the achylia in pernicious anemia and in carcinoma must be due to other causes.

DR. JACOB GUTMAN, Brooklyn, N. Y.: I am particularly interested in that class of cases which Dr. Bassler has thought best to classify as achylia gastrica endocrinica. Indeed, this condition has always been a question mark to me. Until recently, we were compelled to satisfy ourselves with its denomination achylia gastrica "nervosa," i. e., etiologically of nervous origin, knowing no other basis. Lately, however, since we have become more familiar with the functions of the various endocrine glands, achylia gastrica has been given study as Dr. Bassler has shown, from a new viewpoint, the endocrine. During the past several years, I have been interested in studying individuals with achylia nervosa from their constitutional habitus and in determining a possible connection between this disturbance and the tropism or constitutionality of the individual. I found that such individuals exhibit typical features which compel their classification into the adrenotrope class. You know that a study of somatic and functional features of individuals enables us to classify them into the adrenotrope, pituitotrope, thyrotrope or mixed habitus. From physiology, you also know the effects on the secretion of gastric juice and its suppression of such emotions (particularly if sudden) as fright, excitement, aggravation, worry, etc., and that it is effected through the sympathetic, which is not only under complete domination but part and parcel of the suprarenals. The intimate relationship, embryologic and physiologic, of suprarenals and cerebral cortex explains the mechanism by which the emotional stimuli (shock, fear, anger) from the cortex are reflected through the suprarenals and their agent, the sympathetic, on gastric secretion. If you will observe your cases of achylia carefully, you will find no difficulty in coming to the same conclusions, as I did, that they are of the adrenotrope type. Female patients are of masculine build, males of the kind formerly styled status apoplecticus. You will find they are dark haired, dark eyed, ruddy complexioned, hairy skinned with nevi, pigmentations, very firm and stained teeth and numerous other characteristics, of adrenotrope origin. They are all more or less mentally easily susceptible to external influences and present types ranging from complete apathy to extreme nervous irritability. None, however, are of normal mentality, hence the term "nervosa" is not entirely a misnomer. I fully concur, therefore, with Dr. Bassler in his opinion when he speaks of the type of achylia gastrica designated as nervosa as endocrinic in origin for in my experience these cases always exhibit some dyshormonism of suprarenal nature.

DR. ANTHONY BASSLER, New York: I am strongly inclined to agree with Dr. Einhorn, that in cases of pernicious anemia the achylia is simply functional, or, as he expressed it, a resulting condition. Perhaps my two cases in which focal infection could not be demonstrated belonged to the group which Dr. Rehfuss described. Whether a stomach can become primarily infected from pathogenic organisms we have not been able to prove. I believe that that is going to be difficult. I believe, with Dr. Gutman, that there are endocrinitic cases of functional achylia that belong to the suprarenal group. I believe that the stomach condition in pernicious anemia is secondary, and in the two cases that we necropsied there was a definite primary cell atrophy of the type I described. We have had three very striking results with the use of hypotonic cells, cases of definite pernicious anemia, as definite as it was possible under the great variety of blood conditions to say that pernicious anemia was present. In those three cases there was a distinct *Bacillus putrificiens* infection of the bowel, although the bacilli were not present in any numbers in the canal. But here we had definite, marked infection, and we have believed that the benefit obtained has come from the use of lavage in that connection. In the study of the etiology of primary gastric cell atrophy in connection with focal infection cases, there are other conditions that can bring on primary gastric cell atrophy. I did not go into that. I would suggest that a differentiation in bacteriology be made, as far as it is possible, to decide whether the organisms are incidental, or belonging to the simple fermentation group, or whether they are primary and pathogenic.

Smallpox in China.—Chinese smallpox is usually classified among the diseases of children. It is described in excessive detail by native doctors. Fung's "Precious Bag" gives fifty-five varieties of the disease, eighteen rules of contraindications for treatment, several chapters of signs for predicting the result, and a host of preparations for its cure. Great stress is laid on the form, size, character, color, quantity, position, and time of appearance of the eruption. The complications enumerated cover all the sicknesses to which human flesh is heir. As to treatment, acupuncture, moxa, dieting, baths, charms, incantation, and various superstitious practices are employed in addition to drugs. But inoculation is chiefly relied on as the method of prevention. Human inoculation of variolous virus was first practiced in the Sung Dynasty (1022). The prime minister, Wang Tan, after having had several of his sons suffer severely from smallpox, was informed of the successful preventive inoculation practiced by a Szechwanese living at Ngo Wei Mountain. Wang Tan had a son inoculated and the inoculation proved very successful. This method was rapidly taken up and became very popular with the people.—*China M. J.* 33:54 (Jan.) 1919.

EDUCATIONAL POSSIBILITIES OF THE NATIONAL MEDICAL MUSEUM

IN THE STANDARDIZATION OF MEDICAL TRAINING *

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The crisis through which the world has just passed was reached at a mighty cost of money, suffering, sorrow and life. It has freed the people of many nations, it is to be hoped that it has amalgamated the many peoples of our own; and if the world has been made safe, the tremendous effort will not have been made in vain. There will always be wars, but the waging of them will not be undertaken by the more highly civilized nations without just deliberation. The war has produced a mental quickening which has advanced our knowledge of the mechanical and the scientific far beyond that of a like period of peace. Our country is no longer isolated from other countries. Through science the world has become so contracted, as regards transportation, that whereas Columbus spent many weeks sailing from the old world to the new, it now takes but twenty-four hours to travel by air from the old world to the new, and but four and one half days by water.

The medical professsion may be justly proud of the record made by organized medicine during the war. The carrying on of this war, above all others, was dependent to an extraordinary degree on the physician. This statement applies to the medical profession as a whole, which is alike the world over, there being little difference in the capabilities of the leading men. In the wars of the past, generals have deplored the losses due to disease, which were always greater than from injury in action and were looked on as a necessary and inevitable accompaniment of war. In this war there were more than two deaths from injury and its results to one of disease, and yet the world lauded the strategy developed by commanding officers. There have been but few instances of military strategy and almost no casualties among the higher officers in command. The real strategy of this war has been the control of disease by the men in the medical corps who reduced the loss of man power by preventive medicine, and by treatment controlled diseases that in the past were determining factors in the defeat of armies. The failure of the British in the Mesopotamia campaign was a medical failure due in part to lack of rank and attendant authority vested in the medical officers, and in part to army ethics, which made conferences difficult between officers of dissimilar rank. We need only to recall the yearly loss of 250 to each thousand men in the Crimean War, or the record of typhoid in the Boer and Spanish-American wars to realize the benefits of medical control of typhoid and of typhus fever when they started in Siberia. We must also recall the improved morale incident to the modern treatment and quick healing of wounds, whereby men were repeatedly returned to the ranks, instead of remaining permanently disabled and becoming a charge of their country, as in former warfare. Japan, one of the last countries to accept modern civilization, was the first to realize the importance of caring for the health of her troops; her medical officers were held responsible, and in consequence Japan was able to defeat an apparently stronger nation. The exceedingly low disease record of the Japanese army was reduced more than one half in our training camps through the efficiency of that master of preventive medicine, Surgeon-General Gorgas, under whose direction the most efficient army medical organization was perfected that has ever been developed. The mortality rate of our troops in France was lower than that at home among civilians.

Long before our country became engaged in the struggle, hundreds of our profession, feeling the call of humanity, volunteered their services to France and England and served there faithfully and well, suffering many casualties. Our Reserve Medical Corps in France sustained 442 casualties; thus the percentage of losses of noncombatants equaled that of the infantry and artillery. Forty-six officers were killed in action, 22 died of wounds, 12 of accidents, 101 of disease, 4 were lost at sea, 7 were missing in action, 212 were wounded, and 38 were taken prisoners. For months before our country declared war, the first and best organization in preparation was the medical organization under the Medical Board of the Council of National Defense. These preparations were carried out for the purpose of aiding the Medical Department should war be declared. Practically one third of the active members of our profession, whose age, training and capabilities met the requirements of the Surgeon-General, were commissioned for service. Seventy thousand of the medical men not enrolled in the Medical Corps in active service were members of the Volunteer Medical Service Corps. In this group were included the members of the 5,000 local examining draft boards.

It is deplorable, and a blot in the history of this war, that the work of the American medical profession was not recognized by the general staff and that rank, according to responsibility, was withheld in most instances until the war was nearly or quite over. A comparatively long period of service in Washington enables me positively to state that the same unfairness toward the medical army officer still exists. Our government has maintained, at great expense, special places for the training of its army officers, even for their preliminary education, such as West Point for the Army, and Annapolis for the Navy. Students are given opportunity for service after graduation by continued training, maintaining the highest efficiency possible. The government in the past, however, has been at no expense in the training of the medical officers, but it has a postgraduate school for the purpose of training in the theory and practice of military medicine. No account has been taken of the fact that the men in the Medical Reserve Corps had had an average training of at least twenty years, and that their university course and medical course had cost not less than $5,000 for each person. In spite of the injustice of rank and the inaccuracies of assignments, the members of the Reserve Medical Corps sacrificed freely and willingly that our troops might receive the best that medical education afforded. The work in hospitals, including general and special practices, should at least qualify the physician to be placed on a par with the line officer of the army who has had a similar number of years of inactive duty in times of peace. The soldier is rewarded or promoted for risk of life and personal valor; an officer who is given authority to command the destruction of life may have spent but a few

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months in a training camp, while the medical officer who is responsible for the preservation of life devotes many years to preparation. I believe that the necessity of higher rank is essential only as it represents authority and responsibility, and it is required by the civilian medical officer during his period of service. I feel sure that should military service again be required, those in authority will be compelled to give adequate recognition to the medical officers as a vital point of justice.

One last point and I am through with suggestions for the reorganization of army rules which have been well arranged to give a multitude of official positions in time of peace but are most cumbersome and fruitful of delay in time of war. If there must be a general staff, instead of assistant secretaries over divisions, it is highly important that the Surgeon-General's Office should have a representative in each division as a liaison officer.

Surgeon-General Ireland is a most worthy and capable commanding officer for the medical department; he had under his charge a volunteer service of enlisted men, nurses, sanitary corps, dentists and medical officers numbering 300,000; with the transference of the wounded and diseased, he had from 500,000 to 800,000. It is well to call attention to the small number of superior officers assisting the Surgeon-General as compared with the number maintained for corresponding thousands of able bodied men in the regular army.

The general training, discipline and broad education of the youth who participated in the war should insure a just and sane political management of our country for two generations. It is apparent from the rules of the organization of the veterans of this war that they have banded together for the purpose of giving to our country rather than taking from it. The protection against disease and the care of health during the training for war and during war will be recognized and demanded by them as their right, and the right of posterity in time of peace in order that in the future 36 per cent. of youth in the third decade of life will not be found incapacitated by disease and its results, should they be called to defend their country. The records of our draft boards, now made public, show a startling lack of interest on the part of our national, state and local authorities in their responsibility fully, and often even partially, to protect the people against preventable diseases and the accidents of industry. It is a poor government that does not realize that the prolonged life, health and happiness of its people are its greatest asset. The sum of money appropriated by the nation to expend for the prevention of diseases in man is, indeed, meager compared with the appropriations for the prevention of diseases in animals, and for the development of agriculture. Congress dare not investigate labor conditions for the purpose of maintaining a rational control of labor hours, and to control the value of labor in proportion to the investment. It is conceded, of course, that the manufacturers must be encouraged, and that small business operations only must be controlled by congressional act.

Because of the high cost and rapid turnover of labor, manufacturers, however, are recognizing as a necessity the protection of the industrial workers. The newer methods of treating injury, as developed by the war, will prove of the utmost advantage in caring for the accidents of industry. But many hundred cases of trachoma, and thousands of cases of hookworm, in fact, all forms of disease that can be prevented, controlled or cured, still exist. The serums which have been used in the prevention of certain diseases, such as typhoid, typhus and tetanus, have now become commercialized, and their widespread use certainly places them beyond the criticism of the ignorant. Colonel Russell of the Regular Medical Corps deserves great credit for being the first to free the army of any nation from typhoid.

The laws of civilization signify progress and efficiency along scientific lines. Such progress and efficiency is due to the initiative of comparatively few persons who serve as a stimulus both to the professional and to the lay public. Public demand is the only true stimulus for tradesmen and professional men alike. This can be advanced only when the nation adopts the slogan "Educate the public."

The standards of the medical profession have been raised from time to time, and great strides are being made to further the progress, wholly through the efforts of its members. Hospitals are being standardized, surgery is being standardized, and everywhere the subject of sanitation and hygiene, dentistry, school inspection and child welfare work is receiving more attention than ever before. From the lessons learned through the war we may now hope to have government standards of all scientific progress. There is no national control of education to develop Americanism. It has been shown that eight and one half millions of our people of more than 10 years of age are uneducated, and 70,000 of our young soldiers could not read nor write. This is not startling, as we are habituated to ignorance; but to have this secret become known to the world is humiliating to those devoted to foreign missions, and will surely be the basis for the appointment of a cabinet officer of education, who will undoubtedly deal with the medical aspect of health problems of education by instituting another medical board in Washington to overlap the functions of a dozen similar powerless boards. Human life and health have been so cheap that it did not seem necessary to safeguard them until we learned how many of our youth in the third decade were physically incapacitated for army service. Through the psychology of war and by coordination of effort may it not be possible to better many conditions with regard to health problems? We must secure a certain degree of health; state or socialized medicine by which to control its development is inevitable.

The government has dabbled in medical affairs at enormous expense for what has been accomplished. Every cabinet position, and many smaller boards, bureaus and advisory committees in Washington, probably as many as eighteen, deal with certain phases of medicine. Thus under the Treasury Department is the Public Health Service; under the Agricultural Department, pure food and drugs; under the Department of Commerce, health statistics; under the Department of the Interior, the insane not otherwise cared for, amounting to a large number; under the Department of the Bureau of Labor, the accidents of industry, housing, sanitation and child welfare, all under their various divisions, subboards, and committees, none of which will coordinate or give way. Their duties overlap and the expense is great. England is now establishing a ministry of health with supervision of all the educational problems relating to health, sanitation and

preventive medicine. Medicine has been tried and proved to a degree that will enable it to stand comparison with any other effectual work of our government. Why not, therefore, establish a cabinet officer of health, and unite, or at least coordinate with efficiency of management, all of the diverse medical activities?

Undoubtedly great good will come through educational publicity by the development of the National Medical Museum in Washington, an institution which, until recently, has been conducted with an appropriation of but $5,000 a year. It is true that the officers in charge have accomplished much with this meager sum. They have maintained a record of the progress of medicine of past ages and have accumulated many valuable historical specimens. The accumulations of the present war will make the collection modern, and one of the best in the world. I believe that these medical records of the war will be of the greatest value, not only to the glory of medical accomplishment, but also as a means of interesting and educating the public in scientific matters pertaining to health and disease. The museum now houses the splendid medical library of the Surgeon-General's Office. We can visualize a series of like departments, one to be devoted to the missiles of the present war and the character of wounds produced by them, fully illustrated by plaster casts, wax models and drawings; another department to show all the diseases and injuries of bone, with methods of repair and treatment; another department to represent the diseases and injuries of the respiratory system; another, the nervous system, etc.; each one amplified by animated drawings and moving pictures which will mark an epoch in the teaching of preventive medicine, and especially of surgery. There will be a department to demonstrate all the diseases common to man and animal, also those in which insects are the carriers or the immediate hosts for the diseases of both man and animal. In this department will be taught the prevalence, dangers and prevention of tuberculosis, glanders, actinomycosis, etc., as familiar types of a large variety of diseases, and showing the disappearance through control of yellow fever and malaria. The dentists will have a department in which to demonstrate the dangers of focal infections as the cause of chronic and recurring diseases, and to show the results of the neglect of teeth, dangerous types of dentistry, and the best recognized methods of treatment. The department for the curious anomalies and freaks of nature, now the sensational feature of the institution, will be shut off from public view and used only for teaching purposes.

It is probable that the recent graduate in medicine is but 30 per cent. efficient. Realizing this fact, some of our advanced universities do not give a degree until after the completion of one year's hospital service.

To raise our standard of medical instruction and organize a trained Medical Reserve Corps, 10 per cent. (approximately 200) of our medical graduates each year should enter the Army Medical Corps for practical instruction for a three year period with lieutenant's pay the same as at West Point. Nine months should be given to military instruction and field service; nine months to public health service, sanitation and hygiene; nine months to graduate work, and a like period to hospital intern service. If this plan could be developed, a wonderful regular Medical and Reserve Corps would be the result.

The Walter Reed Hospital, built and named in honor of that great martyr to medical progress, should be made the most efficient hospital in the country, and one in which standards of medicine should be established. This hospital, for the most part temporarily constructed, has a capacity of 3,000 beds; it should be replaced largely by permanent construction. Millions of dollars have been spent in Washington by Congress and by the district boards for hospital treatment and maintenance; hundreds of thousands of dollars are spent each year. Surgeon-General Ireland is endeavoring to coordinate the hospital work, the medical instruction, and the laboratories of the museum. It is highly important that he should have the support of the medical profession. While it will cost several millions of dollars to develop such an institution, it will repay many times by the direct return in increased efficiency in the care and protection of our American army, and, through education, in the care and protection of the health of the American people.

NEUROLOGIC SEQUELAE FOLLOWING ACUTE RESPIRATORY INFECTIONS*

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The etiologic factor in the cases cited in this report was difficult to determine and has caused some doubt as to the most appropriate title for the paper. The first case occurred during a period when a small number of cases developed in the camp characterized by a general bronchitis and malaise. The illness was mild, and many cases were so slight that the patients were cared for by the regimental surgeons and were not sent to the base hospital. The initial illness in the first case of the report was apparently mild, and the patient was not admitted until four weeks later, when the neurologic symptoms appeared. The second case appeared during an epidemic which lasted for about six weeks, and existed in several army camps in this country and Europe. For lack of a better name, and because of our ignorance of the etiology, it was called "three day fever." Eight hundred and fifty patients were admitted, and of these 500 entered the hospital between April 12 and April 20. One hundred cases were studied intensively, clinically and bacteriologically.

The characteristic symptoms were: onset with chill or chilly sensations, 72 per cent.; headache, 93 per cent.; general malaise, 92 per cent.; pain in joints and chest, 90 per cent.; cough, 62 per cent.; backache, 51 per cent.; sore throat, 21 per cent., and pain in eyes, 12 per cent. The physical findings were: redness of throat, 51 per cent.; râles scattered through the chest, 50 per cent.; redness of eyes, 11 per cent., and herpes facialis, 5 per cent.

On admission the patients felt very ill, but within twenty-four hours the majority were anxious to return to duty. The complications were slight in the hundred

* From the Medical Service of Camp McClellan, Anniston, Ala.
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† Captain Caro died of pneumonia in January, 1919, at Base Hospital No. 107.

cases studied: bronchitis, 25 per cent.; pneumonia, 1 per cent., and otitis media, 3 per cent. (The clinical data were collected by L. E. Luenrs, First Lieutenant, M. C.)

In the bacteriologic study, many organisms were found to be present, but the predominating ones were a nonhemolytic streptococcus in the throat and the nasopharyngeal cultures, while *Micrococcus catarrhalis* was second in frequency. (The bacteriologic studies were made by G. A. Wislocki, First Lieutenant, M. C.)

Involvement of the nervous system as a sequela following acute infections of the upper respiratory tract is by no means uncommon. Mild neuritides and neuralgias following such infections are frequent, and generally present a good prognosis. Neural complications with fatal termination are comparatively rare.

REPORT OF CASES

Case 1.—*History.*—R. F., a white man, aged 22, was admitted to the base hospital, Dec. 19, 1917, with a diagnosis of "paraplegia, incomplete, and urinary distention."

The family history was negative except that the mother had died of cardiac disease when the patient was quite young. He was of subnormal mentality (moron). He had had measles, diphtheria and scarlet fever in childhood. In 1916, he had an attack of pleurisy involving the left chest. He denied any venereal disease or alcoholic indulgence.

Four weeks prior to admission, he was taken ill with rhinitis, tonsillitis, malaise and cough. At the end of a week he was able to return to his work as a cook, apparently fully recovered. About two and one-half weeks later, or four days prior to admission, he noticed that his left lower extremity was weak and "dragged." Two days later the right was similarly involved, and he had great difficulty in walking. On the succeeding day (prior to admission), he had acute urinary retention and incontinence of feces.

Condition on Admission.—The chief complaint was of pain above the symphysis pubis and inability to walk. Physical examination revealed chronic pharyngitis, hypertrophied and injected tonsils, a small-sized left cervical gland, and scattered, medium moist râles throughout both lungs. Neurologic examination revealed markedly exaggerated knee and ankle jerks, with sustained bilateral ankle clonus, and the Babinski response on the left only. On attempting the plantar reflex, there was a tendency to flex the lower leg ("guard phenomenon"). Pain sensation was diminished from the waist downward, and there were also vague paresthesias. The pupils were equal, regular, and reacted normally. There was no nystagmus nor diplopia.

Course of Illness.—December 21, a complete paraplegia was present. Knee and ankle jerks were absent. From a line midway between the ensiform cartilage and the umbilicus to the toes, pain and thermal sensations were absent, but tactile and muscle sense were preserved. The tendon reflexes of the upper extremities were present and equal. Bladder retention and rectal incontinence continued.

December 25, muscle and tactile sensations were found to be absent in the area described, and there was now complete anesthesia from the ensiform downward.

December 26, complete anesthesia had advanced to the fifth intercostal space, and the patient began to complain of severe epigastric pain. Since his admission to the hospital, his temperature had ranged from 100 to 102 F., always rising at night. The condition of the pharynx and tonsils continued as at entrance. Expectoration became more profuse, but there was no change in the physical signs. There was a flaccid paralysis of the lower extremities, and sphincter disturbance remained unchanged.

December 29, since the foregoing note the patient had become steadily worse. Complete loss of sensation now extended to the clavicles. There was motor paralysis also of both arms. Respiration became Cheyne-Stokes in character. The patient became markedly nauseated, lapsed into coma and died.

Laboratory Findings.—The spinal fluid was under slight pressure and showed 100 cells per cubic millimeter, with as many red corpuscles and a trace of globulin. The Wassermann reaction was negative. The blood count was 10,000 white cells, of which 70 per cent. were polymorphonuclear leukocytes and 30 per cent. mononuclears. The urine was straw colored and cloudy, with a specific gravity of 1.017, a heavy trace of albumin, no sugar, and a large number of white cells (which may have been due to repeated catheterizations).

Necropsy Protocol.—The heart and lungs appeared normal. The vessels along the entire course of the spinal canal were found to be congested, and markedly so over the thoracic region. At the level of the third, fourth and fifth thoracic vertebrae, the cord was very soft and swollen, especially at the level of the fourth, or in the region of the sixth and seventh thoracic nerve segments. Cultures from this region were sterile.

Histologic Examination of the Cord (by Dr. F. B. Mallory).—Blocks of the formaldehyd-fixed cord were zenkerized, and paraffin sections from six different levels were stained by the eosin-methylene blue method. All except the uppermost level showed varying degrees of the same pathologic lesion, namely, large and small areas of degeneration and destruction of the nerve fibers and of their myelin sheaths. In the degenerated areas, the nerve fibers had often entirely disappeared, but in places they were present and much swollen. Where the lesions were at all marked, the remaining tissue (chiefly stroma) was infiltrated with large numbers of endothelial leukocytes, containing vacuoles evidently because of their having been filled with fat and myelin. The endothelial leukocytes occurred diffusely in the tissue and also packed in the walls of the blood vessels. In a few places lymphocytes were present in small numbers, and, in the part of the cord where softening was obvious macroscopically, a few small clumps of polymorphonuclear leukocytes were present, chiefly in the neighborhood of the small blood vessels.

In a section through the lumbar region, the lesion involved the white matter extensively on both sides of the median fissures, and occurred also in foci in some of the lateral tracts on one side. In a section through the dorsal cord, about two thirds of the white matter was degenerated or entirely destroyed. In the softened area, practically the whole cord was involved. Some of the ganglion cells in the gray matter showed more or less extensive retrograde changes, but no necrosis.

Diagnosis.—Transverse myelitis.

Case 2.—*History.*—J. B. M., a white man, aged 26, was admitted to the base hospital, April 7, 1918, with the diagnosis of "acute influenza." The family history was negative except that his mother had died of pulmonary tuberculosis. The patient had had typhoid fever in childhood. In 1912, appendectomy was performed, apparently without drainage. In 1914, the patient spent several months in a sanatorium for pulmonary tuberculosis, but asserted that he was told that he did not have any active lesions. During the months of February and March, 1918, he had two attacks of severe, crampy pains in the muscles of his arms and legs, lasting but a few minutes each time. He denied syphilitic infection. From the age of 20 to 24 he had been very intemperate, he said, but for the preceding two years he had been a total abstainer.

Four days prior to admission (April 3), the patient became ill with photophobia, headache, nausea, vomiting and general malaise. He continued at his duties until the day prior to his admission, when he felt much worse and had a very irritating cough. (His symptoms were similar to those of an epidemic of acute respiratory infection, called influenza, then rife in the camp.)

Condition on Admission.—He complained chiefly of the symptoms mentioned above. Physical examination disclosed a few scattered râles throughout both lungs, but especially at the right base posteriorly. His temperature was 101.4 F. Neurologic examination was essentially negative.

Course of Illness.—April 10, the patient complained for the first time of weakness, numbness and inability to extend his

legs. There was a slight tenderness on pressure over the nerve trunks. The knee jerks were absent, but the ankle jerks were present and equal. The normal plantar reflex was present. There were no Chaddock nor Oppenheim signs, and no sensory disturbances. The temperature was normal, and continued so throughout the course of the disease.

April 19, the condition had slowly grown worse. The patient had considerable nausea and hiccup, which were slow in clearing up under dietary measures. Neurologic examination revealed ankle and knee jerks absent, normal plantars present, no ankle clonus, abdominal reflex absent, and the tendon and bone reflexes of the upper extremity present and active. No changes in sensation were noted except that deep sensibility was increased, and that Laseque's sign was present. Vague annoying paresthesias in the form of intermittent crampy muscle pains caused considerable discomfort. They were confined to the peroneal and anterior tibial muscle groups. The patient could adduct and abduct the thigh, but flexion of the thighs or extension of the legs was impossible. There was no toe drop. To faradism, the quadriceps extensors gave no response, while the calf and hamstring groups reacted slowly. The muscles of the upper extremities reacted well to the current, but the hand grips were weak.

April 26, the patient continued to grow worse. Anorexia was now practically absent. The inability to extend the forearms and the weakness of grasp steadily increased. The patient complained of blurring of the vision as regards distant objects, but ophthalmologic examination failed to reveal any process involving the retina, media or eye muscle balance. There was no facial paralysis. There was a slight huskiness of the voice, and examination of the larynx disclosed a weakness but not a true palsy of the vocal cords. The accessory muscles of respiration were not affected. The triceps reflex was absent on both sides; the other upper arm reflexes were diminished in intensity. To faradism, the triceps muscles of neither arm reacted at all. The abdominal reflex was absent, but the cremasteric was present. There was no change in the condition of the lower extremities or in the sensory reactions. There was no bladder nor rectal symptoms. A slight tenderness was present on pressure over the sciatic, the anterior crural, the internal cutaneous (of the thigh) and the musculospiral nerves at their points of emergence on both sides. At this time these nerves appeared to be chiefly involved with the sciatic to only a slight degree.

April 30, the condition of the extremities remained as described in the previous note. There were no sensory disturbances except the crampy pains mentioned. The accessory muscles of respiration showed no involvement, but the breathing had become slightly irregular and labored. The patient complained of pain in the chest and of sensations of constriction. Examination of the heart and lungs detected nothing abnormal. The pulse, however, had increased from 96 to 120.

May 3, respiratory difficulty gradually increased, and evidence that the diaphragm was involved was quite evident. On the day preceding, the temperature rose to 101 F., and there was evidence of a beginning terminal pneumonia. The patient died from respiratory paralysis plus the toxemia of the pneumonic process, the sensorium being clear to the end.

Laboratory Findings.—The urine was clear and had a specific gravity of 1.027. It contained no albumin nor sugar; the sediment was negative. The spinal fluid was under normal pressure, 1 cell per cubic millimeter, with a very faint trace of globulin. The Wassermann reaction was negative. Blood examination revealed that white cells, April 8, were 11,300 per cubic millimeter, with 73 per cent. polymorphonuclears, 4 per cent. transitionals, and 23 per cent. mononuclears; April 12, 7,800, with 63 per cent. polymorphonuclears, 7 per cent. transitionals, and 30 per cent. mononuclears; April 24, 9,200 with 70 per cent. polymorphonuclears, 6 per cent. transitionals, and 24 per cent. mononuclears. Red cells were 5,600,000 per cubic millimeter.

Necropsy.—A detailed report cannot be given, but no gross lesions of the brain or cord were found. Dr. Mallory examined the cord histologically but was unable to make a diagnosis.

CONCLUSION

The first was a clean-cut case of acute ascending myelitis, in which the only etiologic factor appeared to be an acute respiratory infection antedating the neurologic symptoms by nearly three weeks, but which had never entirely cleared up, as evidenced by the chronic pharyngitis and the infected tonsils still present. The second case was more difficult to diagnose, although the etiologic factor was undoubtedly a respiratory infection of unknown origin. We have already shown how varied were the bacteriologic findings in the group of cases to which the second patient belonged.

Of interest is the very selective action of the toxin—the nerves supplying the extensor muscles of the body being more especially involved, while, peculiarly, the wrist-drop and the toe-drop were absent. The picture from day to day was suggestive of an acute Landry's and, later, perhaps of some form of the muscular dystrophies; but, the symptoms taken en masse, the diagnosis of acute polyneuritis seems unquestionable. The fact that such complications may follow comparatively mild infections of the upper respiratory tract is a matter that always warrants grave consideration and, as is well known, a very guarded prognosis.

ABSTRACT OF DISCUSSION

DR. CHARLES A. ROSEWATER, Newark, N. J.: I would like to ask if Dr. Robey has heard of cases of sudden death following influenza or three days fever. In some of these cases the illness was so mild that the patient was not even confined to bed, and yet these individuals died suddenly. A man about 50 years of age awoke at midnight and complained of pain in the heart; he died before he even had a chance to take a drink of water. Inquiry revealed the fact that he had been slightly indisposed for one day a week or so previously, although he did not stop work. Two weeks after the death of this man his 22 year old daughter dropped dead after eating Christmas dinner. No history of previous illness could be obtained. I have heard of other cases of sudden death following the influenza epidemic. An ophthalmologist informed me that he had seen several cases of strabismus following influenza. This may be a condition similar to post diphtheritic paralysis, and it is not unlikely that there are more of these cases than have been reported.

DR. W. H. MAYER, Pittsburgh: There is no question as to the secondary manifestations of these respiratory affections. There is also no question that the epidemic of influenza was one which may or may not have been due to the influenza bacillus. But many other organisms were present and the lesions of the nervous system which followed were colored by the predominance of this or that type of toxin. I am prone to regard the cases of sudden death, to which Dr. Rosewater referred, as being due to cardiac collapse. It has long been recognized that no matter how mild the primary infection is, the myocardium always suffers, and in my experience those persons who were profoundly ill and who had a long convalescence, especially after influenza, suffered less than those whose illness was of a shorter duration and who had insufficient rest in bed. All manner of mild nervous states with fatigability, in some cases approaching what has been called the neurocirculatory asthenia syndrome, were present. I believe that in these cases the disturbance is primarily cardiac. I realize that I am treading on dangerous ground when I attribute the past epidemic to the influenza bacillus although the work of Klotz and others seems to have satisfactorily established this point despite the presence of the nonhemolytic streptococcus which they have shown to be a secondary invader. By its close association with the influenza epidemic, I regard the epidemic encephalitis as in all probability due to the causational factor of the primary infection. That these cases all present the pathology as so clearly outlined yesterday by Dr. Bassoe

I cannot believe since many of the cases of rather complete involvement have cleared up too suddenly. I especially remember one case in which there was a bilateral third nerve palsy and a bilateral seventh nerve involvement. Curiously, there were exaggerated reflexes and a paralysis of a spastic type in the right arm, with absence of reflexes in the right leg, and in the left leg an exaggeration of the reflexes, with normal reactions in the left arm. This condition persisted for several weeks and then recovered quite rapidly. There are many phases of nervous involvement which accompanied the epidemic of last year, whether called influenza or not, which were not peculiar or different from what has been observed in former epidemics except as regards the encephalitis. There is still, perhaps, some question to discuss concerning the reason for the severity of brain stem symptoms which involve lethargy and stupor which occurred in this last epidemic and are different from the involvement of the nervous system as witnessed in former epidemics.

Dr. Max H. Weinburg, Pittsburgh: Like Dr. Mayer I am inclined to connect these two cases with encephalitis lethargica, particularly the first case, in which there was an increased cell count in the spinal fluid. It would seem that these two cases belong to the polyneuritis group of encephalitis which was reported in the Local Government Bulletin of London, No. 121. Unlike the investigators of Europe who state that there were no changes in the spinal fluid in the cases in New York, we found that a great majority showed an increase of cells, mainly lymphocytes. We have found as high as 400 to 600 cells per cubic centimeter. It would be interesting to know whether the other cases in this series have shown other symptoms, such as ocular or facial palsies.

Dr. Alfred Gordon, Philadelphia: Apart from cardiac organic disease, sudden death speaks very strongly of a sudden lesion in the mesencephalon. In the recent influenza epidemic I had an opportunity to observe a very large number of cases with a great variety of neurologic symptoms. I grouped under the name encephalitis lethargica all cases presenting besides the somnolence peripheral nerve involvement in which all the cranial nerves were more or less affected. It would seem that the cases reported by Dr. Rosewater and others belong to one category, namely, disease of the mesencephalon. As to the anatomic basis for it we must refer to Marie's work in which he speaks with great emphasis of the involvement of the gray matter around the third and fourth ventricle, also of the degenerative changes of the locus niger. As to the somnolence reported in encephalitis lethargica, there is nothing especially new about it as this affection has been known many years. In Raymond's clinics reference is made to a large number of cases following infectious diseases, such as paratyphoid fever and pneumonia. Gayet long ago referred to somnolence as being associated with a lesion in the mesencephalon, and he wanted at the time to describe a special somnolence center. By analogy we must draw the inference that all these cases, whether reported as encephalitis lethargica or following influenza and other infectious processes, belong to one category with variations.

Dr. William H. Robey, Jr., Boston: As to the cases of sudden death, referred to by Dr. Rosewater, we did not have any. I do not know how the epidemic of influenza was regarded in this country. In France there seemed little evidence that it was caused by the influenza bacillus. In most cases it was a profound toxic disturbance due to the hemolytic streptococcus. In the experiments of transmitting the influenza bacillus, the conclusions were very unsatisfactory. I believe these were probably due to some toxin. Regarding Dr. Weinburg's question as to the other cases, the only other complication we had was otitis media in a case with pneumonia. Only two patients presented neurologic signs and both died.

Habit as a Disease.—One of the most serious problems which confronts the physician is the treatment of habit when this must be characterized as morbid, and when it has attained to such a degree that it can no longer be ignored.—Harrington Sainsbury.

PROGRESS OF VENEREAL DISEASE CONTROL*

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To indicate briefly a few of the actual achievements of the division of the Public Health Service entrusted with the direction of the campaign against venereal diseases in cooperation with the state agencies of the country; and to indicate briefly, also, what the year's experience has taught concerning the future development and advance, is my purpose in this paper.

It will be recalled that on the declaration of war the U. S. Public Health Service was given the responsibility, by Congress and presidential order, of supervising sanitary conditions in the zones created around military establishments. The comprehensive program promptly outlined, whereby this task might be fulfilled and the health of the fighting forces protected at the avenues of civilian communication, included, among other measures, the proper supervision over water, food and milk supplies; the proper disposal of human excreta; the elimination of breeding places of flies and mosquitoes, and the efficient control of communicable diseases, including gonorrhea and syphilis.

FORMULATION OF A PLAN OF CONTROL

For the control of venereal diseases in these zones, special measures were necessary. These measures were based on the findings of other countries during the war, as they attempted control of venereal diseases, and on special investigations showing an inevitable relationship between liquor and prostitution, and prostitution and venereal disease. The measures had the authoritative support of Sections 12 and 13 (afterward Chapter 14) of the Selective Service Act, Section 12 prohibiting the sale and distribution of liquor to the troops, and Section 13 (afterward Chapter 14) controlling the activities of prostitutes in and near the zones. But it was not sufficient to protect the soldiers, sailors and skilled laborers within the boundary lines of cantonments or industrial plants.

Previous war history had indicated definitely that epidemic disease is contracted not so much in reservations under military control, as in municipal areas with unsatisfactory sanitary control. It will be recalled that five-sixths of the venereal infections among men who entered military service had been incurred in civil communities before they reached camp. Hence the program for combating syphilis and gonorrhea was formulated on a nation wide basis and was put into effect with the increasing cooperation of state boards of health.

Jan. 2, 1918, the following telegram was sent to all state health officers by the Surgeon-General of the United States Public Health Service:

> Control venereal infections in connection prosecution of the war constitutes most important sanitary problem now confronting public health authorities of United States. Plan of control mailed you today. Request your cooperation forceful enforcement same. Venereal infections should be made reportable, and quarantinable. Means of diagnosis and cure should be provided. Campaign wisely conducted publicity should be launched. Please inform me your action in premises.

* Read before the Section on Preventive Medicine and Public Health at the Seventieth Annual Session of the American Medical Association, Atlantic City, N. J., June, 1919.

This was followed at once by a letter confirming the telegram and further stating that:

> It is evident that the prevention of venereal infections in the military population is largely dependent on the degree with which these infections are prevented in the civil community. This imposes on the civil health authorities the duty of forcefully attacking the venereal problem on the basis of the control of communicable disease . . .

With this letter was forwarded an outline, a working plan, tentative, since no plan could be at once devised which in all phases met the necessities of every state. The outline of that plan is as follows:

1. Epidemiology of venereal disease.
   (*a*) Peculiar to the human species.
   (*b*) Chronic diseases.
   (*c*) Spread by contact—not necessarily sex contact—chronic carriers.
   (*d*) Very prevalent in all classes of society.
   (*e*) Most prevalent in classes of low inhibition.
2. Control of venereal disease.
   (*a*) Depends on the control of infected persons.
   (*b*) Control of infected persons depends on knowledge of their whereabouts. This may be determined by:
      (1) Morbidity reports by serial number (in the case of private practitioners), name to be disclosed when infectious persons cease treatment. Case then followed up by health department, which enforces quarantine act.
      (2) Morbidity reports from venereal clinic and hospital.
      (3) Legal enactment necessary to secure morbidity reports.
      (4) Enacting and enforcing ordinance requiring pharmacists to keep record (open at all times to health department) of sales of drugs for the prevention and treatment of gonorrhea and syphilis.
   (*c*) Object of this control is to prevent contact between infected and noninfected persons.
   (*d*) May be obtained by:
      (1) Quarantine of infected persons.
      (2) Cure of infected persons.
      (3) Education of general public to avoid direct and indirect contact with persons infected or presumably infected.
3. Quarantine of venerally infected persons.
   (*a*) Those who desire and can afford treatment.
      (1) These are instructed by their physicians and theoretically are thus quarantined.
   (*b*) Those who desire cure and cannot afford treatment.
      (1) Means should be provided for free treatment.
         (*a*) Accurate diagnosis.
         (*b*) Dispensary relief.
         (*c*) Hospital relief.
   (*c*) Those who are careless or wilful in the distribution of these infections through promiscuity.
      (1) These, for the most part, are the ignorant or the criminal classes. A careful physical examination of all persons entering jails or other public institutions should be made, those found infected to be isolated, either in a special hospital or under a probation officer who enforces dispensary relief.
4. Cure of venereally infected persons.
   (*a*) Establishment of venereal clinics by health authorities.
      (1) Federal, in zones in close contiguity to cantonments.
      (2) State, in situations in which local authorities refuse or fail to establish a clinic.
      (3) City, particularly by those cities in which commercialized or clandestine prostitution flourishes for the patronage of soldiers but is beyond the authority of the secretary of war.
      (4) Country, in thickly settled rural communities.
   (*b*) By the creation of new, or the utilization of existing, hospital facilities.
      (1) For the treatment of those who volunteer for treatment.
      (2) For the obligatory treatment of persons under control of the courts.
   (*c*) By legal enactment.
      (1) Declaring the venereal infections to be quarantinable.
      (2) Substituting confinement to hospital for confinement in jail in the case of those convicted by courts and having venereal infections.
      (3) Substituting remanding to a probation officer for the imposition of fines.
      (4) To carry out 2 and 3, it is necessary that all persons arrested be examined by the city physician or other authorized person.
      (5) By arrest of acknowledged and clandestine prostitutes by policewomen.
5. Public education regarding venereal diseases.
   (*a*) Relieve the problem of all moral and social issues and place the campaign solely on the basis of control of communicable disease.
   (*b*) Propaganda of wisely conducted publicity.
      (1) Through public meetings addressed by forceful speakers.
      (2) Through public prints.
      (3) By placarding public toilets, placards to emphasize dangers of venereal diseases and to recommend prompt treatment, either by a competent physician or at the free venereal clinic.
      (4) By follow-up work by social workers.
      (5) By the education of infected persons.
         (*a*) By physicians in private practice.
         (*b*) By the venereal and clinic hospital.

CLINICS AND LEGISLATION

The first step in this plan was the opening of clinics. The necessity for prompt protection of the health of military forces had placed on the resources of local communities a greater demand than they could fulfil. The first United States government clinic for the treatment of venereal diseases was opened in November, 1917, at Newport News, Va., one of the principal ports of embarkation. This clinic was operated under the joint auspices of the U. S. Public Health Service and the American Red Cross. A chain of twenty-six such clinics was rapidly established in the extracantonment zones, and their work was emphasized by the program put into effect in adjacent cities. Later, as state boards of health accepted their allotment of federal funds (presently to be mentioned) for control of venereal diseases, other clinics were established until, at the present time, fully 250 clinics where venereally infected persons may receive treatment without charge are listed throughout the country.

Another part of the program promptly put into operation was that of legislation. In March, 1918, *Public Health Reports* contained regulations whereby the state departments of health might control venereal diseases, regulations which were approved by the Surgeon-Generals of the Army, Navy and Public Health Service, and in less than a month thirty-two states had put the suggestions into active operation, either by adopting new regulations necessary to meet the situation, or by taking laws already on their statute books, out from the "dead letter" classification.

NATIONAL APPROPRIATION

The activity and cooperation achieved during the first months of the war were greatly stimulated by act

of Congress, July 9, 1918. At that time the Army appropriations bill was passed, Chapter 15 of which created an interdepartmental social hygiene board and a division of venereal diseases in the U. S. Public Health Service, and carried an appropriation of $4,000,000 for the essential activities and extension of this work during the two-year period ending June 30, 1920. The special section making this appropriation is familiarly known as the Chamberlain-Kahn act. From this time the activities of venereal disease control centered in the new division of the service created under the terms of this section.

The responsibilities assigned to this division were threefold: first, to study and investigate the cause, treatment and method of prevention of venereal diseases; second, to cooperate with state boards of health in carrying through a program of control and prevention; and third, to promulgate and enforce interstate quarantine regulations covering the travel of venereally infected persons. The $1,000,000 appropriated under Section 6 of the Chamberlain-Kahn act, for allotment on the per capita basis to the various state boards of health, was promptly allotted to those state boards of health which fulfilled the regulations issued by the Secretary of the Treasury, containing requirements and standards. These regulations included the following points:

1. Syphilis and gonorrhea must be reported either under a state law or a state board of health regulation having the effect of law.

2. An officer of the Public Health Service shall be assigned to each state receiving the allotment, to cooperate with the state health officer in supervising venereal disease work in the state.

3. The allotment itself shall be expended on standard lines, 10 per cent. being assigned to administration, 50 per cent. to treatment, and 20 per cent. each to repressive and educational measures (the reprint containing the regulations in full is included in the exhibit of the service).

No financial condition was attached to the allotment for the first year. To receive an appropriation for the coming year 1919-1920, each state will appropriate a sum equal to that received from the federal government. It is of interest to know that up to the first of June thirty-two states had already appropriated the quota entitling them to receive an allotment for the second year of this fund.

In addition to this congressional appropriation, a further stimulus was given to the work of the service by the presidential order of July 1, 1918, placing all civilian public health activities conducted by federal agencies under the Public Health Service. An exception was made of the Bureau of Labor Statistics, which was investigating vocational diseases, shop sanitation and hygiene.

ONE YEAR'S WORK

The first year's work of the division has emphasized the cooperation with state boards of health, in a nationwide effort to eradicate venereal diseases. In this effort, forty-four states are at this time actively cooperating. Of the four remaining states, two have not yet passed the necessary state laws or regulations which would bring them under the provisions governing the allotment, but may do so before the close of the present legislative session.

Regulations controlling the interstate travel of venereally infected persons were promulgated, Nov. 22, 1918. This, it will be recalled, was another duty of the division defined in the Chamberlain-Kahn act creating it. The third obligation, to study the causes and the treatment of venereal disease, will be met as accumulated records and case histories supply the authentic social data for tracing deep seated causes and providing treatment of the needed scope and duration. Meantime, more is known of the causative organisms and the mode of transmission than is being put into actual practice for prevention. The immediate necessity was for action. Research in sociological as well as medical fields is also especially provided for in the terms of the Chamberlain-Kahn act.

MEDICAL ACTIVITY

The four lines of the division's activity may be generally described as medical, educational, legislative and social.

Conspicuous in the medical work has been the establishment of the clinics for the diagnosis and treatment of venereal disease. The rapid increase in number of these clinics has already been mentioned; but the need for establishing yet other such centers of advice and treatment cannot be overemphasized. It is futile to educate people on the subject of venereal infections if no place is provided to which they may go in their aroused interest or anxiety.

The relation of the venereal clinic to other clinics of the department of health or health centers, their location in parts of the city accessible to various social groups, their provision for service in evening as well as daytime hours, and their equipment and personnel are matters of greatest importance in the control of syphilis and gonorrhea.

No less important, also, is a further deepening of the interest of general hospitals in this work, in order that beds may be available for patients who must remain under detention for treatment, since they cannot or will not take care of themselves; and also for venereal patients needing special medical or surgical care during their period of infectivity. A striking development of the work in certain hospitals in which wards are provided for patients of the "carrier" type is the introduction of vocational work, as well as recreation of suitable kind, in order that the patient who for the first time, perhaps, has learned the significance of this disease, may not simply be cured physically and then set free to resume a life of prostitution (if that be the source of infection), or allowed to return to society not better safeguarded than before against the physical temptations of the old existence. Even the preliminary reports of such attempts available thus far are encouraging. A certain business firm sends experts to one such hospital ward to train the patients in their particular industry, carries them by number on the payroll, and accepts them as regular employees when they are discharged from the hospital.

This is no utopian state dreamed of and vaguely hoped for. It is a practical application of vocational therapy to this new group of patients, whose potentiality to society for good or ill is most significant.

In hospital and in clinic alike the opportunity for thorough mental examination is evident. During the period of observation and treatment of venereally infected patients, subnormal types should be separated from the normal, and provision made either for the permanent care of those whose mentality is too low for them to face the social and economic demands of life, or for the training of those who may attain a

degree of economic independence under adequate supervision. At this point it is not necessary to do more than mention the relation of this program to efforts for better state reformatories and for the industrial farms where, in addition to vocational training, the benefits of continual outdoor life may combine for the rehabilitation of the patient.

Before passing from this mention of medical measures in the venereal program, a word must be added concerning the urgent request sent to physicians by the service that they cooperate in reporting gonorrhea and syphilis under their state laws and regulations, as other communicable diseases are reported. The decision is with the individual state or city whether these reports shall be made by serial number or by name, and the procedure varies in various localities. That the serial number is perhaps in many circumstances the more satisfactory method is explained by the fact that the responsibility for the patient represented by the serial number is left precisely where it belongs, namely, on the individual physician who is treating the case. This is of advantage to the physician in that it allows him to study the case from beginning to end. It is of advantage to the patient who has given his confidence to the physician.

A special opportunity for highly trained work is increasingly evident as the clinics multiply and develop. This is for follow-up work, which the service believes can best be done by graduate nurses with additional training to meet the social aspects of the problem.

There is evidence, too, that as in the case of other well established clinics, the venereal clinic is becoming a place of special consultation and of experience and training for physicians and older medical students, and that it will play a conspicuous part in the teaching of syphilology.

EDUCATIONAL OPPORTUNITY

When the service speaks of educational measures the term implies explanation and, when necessary, warning to the public with all truth and frankness concerning these diseases so long held to be "unmentionable." It is maintained that the information given to the public should be frank without being unnecessarily frightful; that it should emphasize the means of preventing infection, recognizing, however, among these means, not simply treatment itself, but the no less truly therapeutic measures of improved moral, educational and social conditions.

In special relation to the teaching of children on matters of sex and reproduction, the educational material published by the service emphasizes the importance of home teaching. The consensus of opinion (as evidenced in many conferences) of teachers from schools, colleges and universities of many sections of this country is that courses of sex hygiene in schools should be not distinct in themselves, but that the information should be given simply and unobtrusively in connection with courses in botany, biology, civics, history, etc. The value of poster exhibits and motion pictures is proved practically beyond question —when the subject-matter is of the highest standard.

It may be of interest to note at this point that one of the subjects for research for which Chamberlain-Kahn funds have been allotted is to the department of psychology of a leading university to provide for the thorough investigation of the effect on various audiences which view them of moving pictures on subjects of social hygiene.

LEGISLATIVE ENACTMENTS

Legislative measures sincerely and unflinchingly enforced are at this time necessary in order to control the wilful and ignorant persons of the community who, themselves infected, will not take precautions to protect their neighbors. The right of the community to protect its health has long been recognized; and citations from various legal writers of unquestioned authority were made early in this campaign for the control of venereal diseases by the attorney general of the United States. Enforcement of sanitary measures should not create an issue with educational and moral appeal. The moral value of whatever will best safeguard the community at present, and therefore make for the best in posterity, cannot be questioned.

It is evident that no arbitrary grouping of these measures is attempted or possible. Medical effort is in the best sense educational. Education in this field includes medical and legislative information, and both are vitally social, in addition to the activities of a distinctively sociological nature, on which the permanent control of syphilis and gonorrhea, as of other communicable diseases, depends.

COMMUNITY AND COOPERATIVE EFFORT

The undertaking is a community undertaking. The individual physician cannot from his office follow all his cases of gonorrhea and syphilis to the successful termination which means control and prevention of disease. Nor can the health officer alone, even with his special administrative machinery, entirely meet the situation. There is needed opportunity to draw on the resources of the community and to take advantage of aroused public sentiment and civic loyalty in prosecution of this campaign, and the social agencies of the community have never been so alert to help intelligently or criticize acutely as they are found to be today.

That this is not theory, but an actual, practical possibility, finely demonstrated in the past two years, may be indicated even by mention of some of the various civilian groups in active cooperation with the service and the state boards of health. Employers of labor have responded to the program for introducing into their plants educational literature, and have established clinics—sometimes several firms in a small town uniting to meet the expense of the clinic.

Groups of working men and women have not only welcomed the literature and lectures in the industrial plants, but have also expressed through their official organizations appreciation and desire to cooperate. Chambers of commerce, rotary clubs, churches and church organizations, women's clubs, parent-teacher associations—these and many other groups in the community stand ready to serve by influence and active work or financial support.

When the work was first organized, an association of retail druggists, representing about 8,000 of the 47,000 retail druggists of the United States, offered its cooperation in this important work. A card was prepared, approved by the druggists' organization and mailed to pharmacists all over the United States by the Public Health Service. This card contained an appeal to the druggists to support venereal disease control work by pledging themselves to discontinue the sale of venereal disease nostrums, and also by refusing to prescribe remedies for the self-treatment of venereal diseases. The response was gratifying. The druggists

not only agreed to cooperate as they were asked to do, but also agreed to hand each customer who applied for a remedy ordinarily used in the self-treatment of venereal diseases, a circular advising the sufferer to seek competent professional service, either from a practicing physician or at a venereal clinic. In this plan approximately 32,000 druggists are now actively cooperating.

Perhaps this rapid résumé of the work of eleven months will at least suggest the year's progress, in its total accomplishment and in its direction.

THE PHYSICIAN'S PART

In closing this paper I desire to emphasize the peculiar relation to the future of the program which is borne inevitably by the physician himself. Into the hands of many of you has already come that recently published little volume, prepared for use in this campaign by Dr. J. H. Stokes of Rochester, entitled "Today's World Problem in Disease Prevention." In his preface Dr. Stokes says:

> It is no longer possible for the individual physician to maintain the isolation and the arbitrary powers and reponsibilities which were his in primitive times. . . . A partnership between intelligent and well informed public opinion and the physician as leader is the logical ultimate expression of the trend of the times. . . . The physician as a leader, acting alone, is helpless. . . . To make every intelligent man, woman and child a legionary in the organization of the public health, some of the knowledge so long sedulously kept as the property of the profession of medicine must be imparted to the rank and file.

The opportunity of the physician, the challenge to the physician, of this determined undertaking to control syphilis and gonorrhea is unmistakably evident. Consider, for instance, the following truths: It is the physician who must teach the future physician. The demand for a higher grade of teaching in syphilology has been heard, not in this country alone; it has come from the medical profession of every country which, in the past four years, has borne the burdens of war.

It is the physician who must finally teach the people, whether in his own office or in the clinic consulting room, what they must know and do to control and prevent venereal disease. To no other person but a physician comes such an opportunity as that of the patient's first visit for offering enlightenment, for teaching a truth which shall endure and for impressing on him his responsibility toward his family and neighbors. In this task, personality, sincerity, skill and humanity are taxed for the remaking of the individual. Contact not only with the patient but with the patient's family, the social group and community means multiplying the physician's power to control disease. Physicians make, as it were, a system of social engineering, whereby breeding places of syphilis and gonorrhea may be drained, more easily than was supposed possible. The examination of the family of an infected person is not often refused when frankly and tactfully suggested by the physician. Very often it is even asked for by the patient.

This procedure leads yet farther. It means often the discovery of carriers, of sources of infection in the community, sources which the physician himself may not be able to control, but which becomes the concern of the health officer duly acquainted with them by the reports of the physician.

Again, it is the physician who after all reduces the number of "lost cases," always a clinic or dispensary problem. The patient who is treated simply as clinical material will naturally not desire to return for a second experience of the kind. But he will quickly discern the humanity of the man who treats him, the human spirit of the institution to which he goes. Skill, prime essential though it be, is not alone enough to insure the full realization of a clinic's possibilities. Tribute to the men who have proved this true!

And it is again the physician who will maintain high professional standards of clinic and hospital. It was long ago whimsically remarked that the physician who helps develop the clinic is cutting his own financial throat; but this, of course, is untrue, and that a new view of clinic service prevails today is evident. The physician is asked to give much. There is also much for him to gain. Besides the rich opportunity for studying varied types in a clinic which receives, for instance, 1,000 venereal cases a month, there is to be gained also a knowledge of the peculiar social backgrounds of syphilis and gonorrhea. These must be known and reckoned with. On the control of social causes depends all permanent control of the diseases.

Finally, the physician may be assured that his participation in various phases of this limitless effort, scientific and social, will insure for him public support of an intelligent and appreciative type that is a thing unique today. Other national campaigns against tuberculosis, trachoma or hookworm disease, all have had social and economic complications of their own. But in the case of syphilis and gonorrhea there is added to these social and economic aspects of the problem the handicap of age-long false tradition. We face a very slowly yielding prejudice against even discussion of these matters. We face the difficulty of directing human wills and instincts. Such a demand on the physician, and on every intelligent member of society, would seem appalling were the possibilities not testified to by a remarkable demonstration of what has already been done.

Preventive medicine is one of the contributions to the world of the medical profession. To the medical profession the world, in this after-war day, turns in confidence for the solution of its deepest problem.

ABSTRACT OF DISCUSSION

Dr. Wilfred H. Kellogg, San Francisco: California was the first state in the field in this work. Owing to the fortunate existence of an emergency fund the governor was enabled to make an appropriation of $60,000. A bureau was organized and in operation as early as August, 1917. Its program was based on the usual classification or division of work into three principal parts, education, law enforcement and treatment. We might more accurately arrange these activities in a more extended manner, such as elimination of foci of infection, education, law enforcement, rehabilitation, prophylaxis and care of the feebleminded. Under the first heading will come the treatment of infected cases, quarantine, establishment of clinics and reporting of cases. Perhaps, under this heading should also come the division of rehabilitation, although this problem must be handled in an entirely separate and distinct manner. I refer to the rehabilitation measures capable of application to prostitutes, which it is possible by law enforcement measures to bring under the jurisdiction of the health department. The enforcement of law against prostitution is of extreme importance in controlling the spread of venereal diseases, and yet I feel that our best position is to take advantage, wherever possible, of activities of this sort in local communities by seeing to it that women taken up by the police are properly detained and treated, but not to be too closely related with the pushing of activities in this direction.

I think we should greatly favor law enforcement, but it would be a mistake to be associated too intimately with organizations which are related exclusively to the moral side of the problem.

Prevention of infection by prophylactic treatments in civilian communities is very difficult to carry out, and it is this reason rather than the moral objections that are brought against it that should weigh in the decision as to whether or not it is to be added to our list of activities.

DR. A. E. CHASE, Texarkana, Ark.: I find that the railway employee is, perhaps, unusually exposed to venereal infection, because of his mode of life and because of his being away from home a great deal. When I took charge of the health and welfare of many thousands of these men, I felt it a duty to open a venereal campaign, on two lines. The U. S. Public Health Service helped us out wonderfully. On the educational line, I ran up against a stumbling block. A committee was appointed by the Railroad Administration and informed me that this educational campaign should not be carried on, because they had been ordered by their superior officers not to carry on the campaign among railway employees because the unions would be peeved by such a procedure and labor troubles would result. I am sure that those who originated that order did not understand the railway employee, because I have met many thousands of them in talking over this program, and as a result I have not only got them to endorse this campaign, but they have asked that additional means be taken to carry on the campaign, and that amounts be withheld from their monthly salary to carry on the work. It shows that the railroad employee is a man, and that he understands his own faults and that he is willing to do all he can to promote health conditions himself. He is not a man who is unusually touched by that class of educational propaganda. On the medical side there is a very difficult question. This class of cases is very hard to handle. The prophylaxis side of the question is the most important, and I hope that the U. S. P. H. Service will help us arrange stations not only for railroad men, but for all others who need this service.

DR. FRANKLIN L. GRAM, Buffalo: I would like to ask Dr. Pierce whether he would advise us to keep records and reports of these cases by serial numbers. We have been carrying out a venereal program for the past eight years in Buffalo; we have a clinic and a hospital for the treatment of the disease; we give arsphenamin free; we give examinations free, and we help in every way along the prophylactic and curative line. After an actual experience of eight years, I can say that we would be swamped if we were to conduct our work by serial numbers. We record the real names and real addresses, but the records are confidential, the same as we carry our tuberculosis records. We had the same trouble originally with tuberculosis records, but by keeping them confidential and letting the public know that they were confidental, we succeeded in getting all the facts. We also work together with the police and courts.

There is another matter of very great importance, namely, maliciousness. I had a report recently, made by telephone, of a young lady who was accused of spreading venereal infection. Investigation and examinations showed that she was innocent and the accusation malicious. I fail to see how we are going to control venereal disease or make any progress in that direction, with all due respect to the federal and state government, by reporting and recording cases by serial numbers.

DR. I. D. RAWLINGS, Chicago: In Chicago we receive the report without the name or address of the patient and we find that it works out very well. We have in our ordinance a provision that the physician must report in this manner, and if the patient discontinues treatment, then it is the duty of the physician to furnish the office with the name and address of the patient. We then look up that patient and require him to get under treatment with some physician, or if he is not able to pay, he must go to the clinic and take treatment. I do not see but what this method works out as well as any other would. In the report of the case, we also get the data as to where he contracted the infection, so that point is covered by our method equally as well as if we had the name and address of the patient. Under all plans of reports the patient is apt to give a false name or a wrong address or both. One thing that I hope I will get out of this discussion that will help us in our work is how to induce the patient to give the physician his true name and his correct address, so that if the patient discontinues treatment and the name and address of the patient as given to the doctor is sent by the physician to the health department, we can locate him without difficulty. The patient can give a false address under any system, and you do not discover it until you try to locate him. These people cannot always be located. That is the chief trouble we are having in Chicago, and I do not see how we can remedy this difficulty by either system. Venereal disease patients will give a wrong address to their physician, and the result is that the health authorities are unable to act as they should.

DR. C. C. PIERCE, Washington, D. C.: Dr. Kellogg mentioned the place of prophylaxis in part of his program for venereal disease control. The Public Health Service believes that in the clinics prophylactic or early treatment should be given to those who apply. We do not, however, believe in the establishment of prophylactic stations as such, similar to those organized and maintained during the progress of the war, for several reasons. One is that you cannot conduct such a station properly without causing a great deal of antagonism on the part of certain groups of society, and another is that you have no control over persons who take the prophylaxis, as was the case in the army. In regard to Dr. Chase's statement that some railroad officials had told him not to carry on an educational campaign among unions—that is a very remarkable statement, because the Railroad Administration is very much in favor of his program. Practically all of the labor unions have welcomed most heartily the introduction of educational methods and are helping to carry on themselves. With regard to patients not staying under treatment: That is one of the results to be accomplished by the reporting of venereal diseases.

In regard to reporting by serial number or by name: That is left entirely to the local health authorities to choose the method they think gives the best results, and that is the only way it can be done. All data giving the sort of information which is of use to the health officer can be secured by either system of reporting. Health officers and government officials and others must not feel that they must conduct this campaign in all its details by themselves, but that they should utilize the present great desire on the part of all persons in the United States to do something to increase the efficiency of our country. The central controlling agency in the venereal disease program is the state board of health, but we can utilize existing agencies in all parts of the country, and they will be of great material assistance to the state board of health or the city board of health in carrying out a comprehensive program for the prevention of venereal disease. A very important phase is controlling the carrier and treating those who are already infected because in no other way can venereal diseases be prevented.

Dr. José Rizal, the Hero of the Philippines.—One of the greatest personages in the history of the Malayan race was Dr. José Rizal who was born near Manila in 1861. He was educated in the Philippines and in Spain where he obtained the degrees of doctor of medicine and philosophy and continued his studies at London, Paris, Brussels and in Germany. His writings were mainly devoted to arousing the people of the Philippines to throw off the yoke of Spain, especially his two satirical novels exposing the malgovernment and despotism of Spanish rule. They were published in Spanish in Germany and are said to have had a great influence on the thought of his country, and caused him to be branded by Spain as a traitor. On his return to the Philippines he was seized and executed, Dec. 30, 1896. His birthday, June 19, has since been celebrated there with increasing enthusiasm as he is considered the greatest national hero of the Philippines. His career was described in the *British Medical Journal*, 1:829, 1907, and the latest *Literary Digest*, July 26, gives a short poem he wrote in English the night before his execution. He could write in six languages, and had a reading knowledge of Latin, Russian and Dutch.

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LAËNNEC AND THE STETHOSCOPE

One hundred years ago—in 1819—Laënnec[1] published his epoch-making work on auscultation. He was then 38 years old, and seven years later he died from pulmonary tuberculosis. It has been said that he cared more for his proficiency in horseback riding than for his fame, and that he "was but a breath of air, and he thought himself a Hercules. He transposed the facts, and the vigor of his mind he placed in his muscles. Innocent failings, imperceptible blots, especially on the brilliancy of those great and exemplary lives so full of glory because they are useful."

Whatever his thoughts, if any, in regard to his fame may have been, he had no doubt in his mind as to the value of auscultation, and when he had recovered somewhat from his first breakdown, he did not hesitate, in 1822, to return to Paris from his home in Brittany, and to plunge again into the hardest kind of work, because he felt it a duty to extend further the knowledge of his new method, as it might be of use to mankind. For Laënnec is vastly more than merely the fortunate discoverer of the stethoscope: he himself demonstrated so completely its usefulness in diagnosis and treatment by clinical and anatomic observations of unrivaled accuracy and completeness as to leave comparatively little for others to add. This is illustrated in a striking manner by the many terms first used by him in this book and now familiar to every physician: stethoscope (στῆθος, chest; σκοπεῖν, to examine); auscultation; râles —mucous, liquid, crepitant, sonorous; fremitus; pectoriloquy; metallic tinkle; egophony; bronchophony; puerile breathing. He devised a new method of observation and then wellnigh exhausted the field of investigation by that method, with results of the greatest practical value. Nor were Laënnec's observations on the symptoms and lesions of disease primarily dependent on or initially incited by his happy discovery of mediate auscultation; for they had been carried on since his early student days, when he drew up the minute histories of 400 cases of disease, in large measure the basis of much of his future work, until he became chief physician in the Hospital Necker in 1816, and it was in the course of these clinico-anatomic studies that the idea of the stethoscope came to him. It is unnecessary to add that there probably was no one else then living who could have made so good and immediate use of this idea as Laënnec by reason of his training in power, his accuracy as observer, his faithfulness as recorder, and his conception of the relation of symptoms of disease to the changes in the organs. This was the manner in which he made his observations:

> When a patient enters the hospital it is the duty of a pupil to collect from him those anamnestic facts which he can give concerning his disease, and to follow their course. On examining the patient myself, I dictate the principal symptoms which I observe—those especially which may serve to establish the diagnosis or indications for treatment. And I confirm my conclusion, unless I may have to change it, by subsequent observations. This dictation, which is made in Latin for reasons easily appreciated [Laënnec was an accomplished scholar in the learned languages], is taken down by the pupil in charge of the patient, and at the same time on a separate sheet, which I call the "diagnostic leaf," to keep which, in order that it may be shown to me and read whenever required at each visit, is the special duty of another pupil. If a new sign appear, such as might modify the first diagnosis, I have that also added. If a patient die, the account of the autopsy is collected by the pupil in charge of the case. I read this account before all those who have been present at the autopsy, and if any correction is to be made, I make it on the spot, after having consulted with them.

Children playing about a long beam are said to have awakened in Laënnec the first germ of the thought of the stethoscope. One child would listen at one end of the beam while another tapped lightly the other end, the sound being transmitted through the solid beam. Again his own words tell the story best:

> In 1816 I was consulted by a young woman laboring under the general symptoms of diseased heart, and in whose case percussion and application of the hand were of little avail on account of the great degree of fatness. The other method just mentioned being rendered inadmissible by the age and sex of the patient, I happened to recollect a simple and well-known fact in acoustics, and fancied it might be turned to some use on the present occasion. The fact I allude to is the great distinctness with which we hear the scratch of a pin at one end of a piece of wood, on applying our ear to the other. Immediately, on this suggestion, I rolled a quire of paper into a kind of cylinder and applied one end of it to the region of the heart and the other to my ear, and was not a little surprised and pleased to find that I could thereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear. From this moment I imagined that the circumstance might furnish means for enabling us to ascertain the character, not only of the action of the heart, but of every species of sound produced by the motion of all the thoracic viscera, and, consequently, for the exploration of the respiration, the voice, the rhonchus, and perhaps even the fluctuation of fluid extravasated in the pleura or the pericardium. With this conviction, I forthwith commenced at the Hospital Necker a series of observations from which I have been able to deduce a set of new signs of diseases of the chest, for the most part certain, simple and prominent, and calculated, perhaps, to render the diagnosis of the diseases of the lungs,

1. Laënnec, René-Théophile-Hyacinthe: De l'auscultation médiate; ou traité du diagnostic des maladies des poumons et du cœur, fondé principalement sur ce nouveau moyen d'exploration, 1819.

heart and pleura as decided and circumstantial as the indications furnished to the surgeon by the introduction of the finger or sound, in the complaints wherein these are used.[2]

It is interesting to note that Laënnec speaks of Auenbrugger's long neglected discovery of percussion as one of the most valuable in medicine, and emphasizes the value of the combination of percussion and auscultation.

To the medical student and young physician there should be a powerful inspiration and stimulus in the brief life of Laënnec. He was assiduous and systematic as a student, and began to make independent observations when barely 20, thus attaining a favorable distinction early. He lectured on pathologic anatomy, wrote critiques and reviews and took an active part in medical society work, presenting specimens and communications before he obtained his degree. Having graduated, he devoted himself to his practice and to his medical studies, in the course of which it became clear to him that to know disease we must know the underlying changes, and that this knowledge can be gained only by thorough, systematic, combined clinical and anatomic observations. And so he made his immortal discovery and continued his observations "with a degree of success, and a fertility of results, much more remarkable than the discovery itself."

ZINC AS A NORMAL CONSTITUENT OF FOODS

Less than a quarter of a century ago, iodin assumed a new physiologic significance through the discovery of its constant presence in the body as a constituent of the thyroid gland. Compared with such elements as calcium or chlorin or iron, the quantity of iodin occurring in the organism is exceedingly minute. In contrast with the hundreds of grams of lime, for example, a few milligrams of iodin represent the entire complement of the latter constituent; nevertheless it has already established a claim for indispensability in the normal functioning of the body. Indeed, there are few more striking illustrations of the profound potency of minute portions of any element than are afforded by the iodin-containing thyroxin which Kendall has succeeded in isolating from the thyroid gland.

This experience with iodin has paved the way for a more respectful attitude toward suggestions of the possible physiologic rôle of other elements which have heretofore not been counted among the essential or even the potent constituents of the body cells and fluids. The occasional statements that certain metals like copper and arsenic are to be found regularly in the tissues were usually regarded as due to experimental errors of analysis or to accidental contamination. The tendency of the body at times to store metals, such as those mentioned, in the liver has become familiar from medicolegal observations of toxicologists.

The report by Mendel and Bradley[1] of Yale University that certain marine mollusks found in Long Island Sound regularly contained zinc directed attention to new possibilities with respect to that element. Copper had long been known as a constituent of some of these lower forms, being a part of the protein compound responsible for the "blue blood" which many of them may exhibit. Ocean water is known to contain small traces of the less common elements, such as arsenic, copper, lead and zinc. The most conclusive indication that zinc is a normal constituent of some of the marine forms rather than a chance contamination due to the presence of foreign elements in their environment has been furnished by Phillips.[2] He found zinc in specimens collected at the Tortugas Islands far removed from any possible contamination of the sea water.

The experts of the Bureau of Chemistry in the U. S. Department of Agriculture[3] now report that zinc is present universally in oysters—at least in those grown in Atlantic waters. It is probably always associated with copper. The amounts of metals present appear to have no direct relation to the body weight of the oyster or to the quantity of ash-forming solids it contains. The presence of very large amounts of copper is usually revealed by a blue or bluish green coloration. Such oysters invariably contain large amounts of zinc, though not in uniform proportion to the copper. The blue coloration serves, therefore, as a reliable indicator of the presence of large amounts of such metals. Hiltner and Wichmann remind us that the oysters from certain localities have gained unfavorable notoriety because of the amounts of copper they contain, frequently excessive enough to impart to them a strong turquoise-blue color and a metallic flavor, and to yield a decided copper coating to bright iron when boiled with it in dilute acid. They add that since the amounts of copper and zinc found in apparently normal oysters from different localities vary so widely, and since there seems to be no uniformity in the ratio between their copper and their zinc content, it would seem that oysters are capable of taking up amounts of these metals beyond their immediate physiologic needs.

It seems justifiable, in the light of the latest analyses by Birckner[4] at the Bureau of Chemistry, to regard zinc as a normal, or at any rate common, constituent of many foods. Unexpected though the information may be, ordinary market milk averages

2. Laënnec: Treatise on Diseases of Chest and on Mediate Auscultation, translated from latest French edition by John Forbes, Ed. 4, London, 1834, p. 5.

1. Mendel, L. B., and Bradley, H. C.: Experimental Studies on the Physiology of the Mollusks, II, Am. J. Physiol. 14: 313, 1905.
2. Phillips, A. H.: Papers from the Department of Marine Biology of the Carnegie Institution of Washington, Pub. 251, 11, 1917.
3. Hiltner, R. S., and Wichmann, H. J.: Zinc in Oysters, J. Biol. Chem. 38: 205 (June) 1919.
4. Birckner, Victor: The Zinc Content of Some Food Products, J. Biol. Chem. 38: 191 (June) 1919.

about 4.2 mg. of metallic zinc per kilogram. The zinc content of milk from individual cows varies somewhat in different animals. It is highest during the early part of the lactation period. Birckner reports that a given volume of human milk evidently contains considerably more zinc than an equal volume of cow's milk; and it would appear that the zinc content of human colostrum is lower than that of later milk. These findings are of special interest in view of the fact that the total mineral matter of human milk is only about one-third as high as the mineral matter of cow's milk. Hens' eggs contain an average of 1 mg. of zinc per egg, the metal being contained in the yolk alone. Cereals may also contain zinc.

One quite naturally inquires what may be the physiologic significance of such by no means negligible quantities of an element regularly present in important foods like milk and eggs. Are we to conclude that zinc is not merely an accidental constituent but a regular and perhaps essential ingredient of protoplasm? And what is to be said of manganese, which is reported present, though in smaller quantities? These are new questions abounding in a special interest because some of the elements here concerned, as well as arsenic lately reported present in most oysters,[3] are known to have a potency that has long since placed them in the category of useful drugs.

THE COMPLEMENT DEVIATION REACTION IN TUBERCULOSIS

For a number of years, continental and American laboratory workers have endeavored to elaborate a reliable technic, based on the deviation of complement, for the diagnosis of tuberculosis. The clinician would welcome such a test to the degree that it would shift the burden of diagnosis to his laboratory co-worker. But the test, to be useful from this point of view, would have to be accurate almost to the point of infallibility; doubtful, borderline reactions would defeat its very object. Perhaps it is our good fortune that the realization of such an ideal is not in prospect—fortunate so far that its inherent tendency would be to make our diagnosis and clinical judgment in tuberculosis less exact and reliable rather than more so. Tuberculosis is the disease of all others that requires sagacious clinical judgment, along with discreet management: judgment based on all available facts—on a sane evaluation of the physical examination and the history of the patient, of the roentgen finding, of the sputum examination, of the reactivity to tuberculin, of the clinical course—certainly never on a single laboratory finding such as the complement deviation test.

The Wassermann reaction has had the benefit of two quite fortuitous conditions that have not been operative in the test as applied to tuberculosis. When the Wassermann reaction was negative in cases that seemed clinically syphilitic, we were able to use the simple therapeutic test without great delay in the diagnosis. In the second place, despite the fact that the immunologic premises underlying the conception proved untenable, the technic remained practically fixed and soon demonstrated its usefulness and applicability.

In the tuberculosis fixation test there has been so far no agreement as to the proper method of carrying out the reaction. The greatest divergence has been observed in the preparation of the antigen. Whole and macerated bacteria, autolysates, extracts and filtrates, tuberculins and chemical fractions of tubercle bacilli have been used, and all with a not inconsiderable divergence of end-results at the hands of different workers, even when using identical antigen preparations. In sputum-positive cases the reaction has been positive in from 70 to 95 per cent., leaving a number of clinically active cases with a negative reaction. On the other hand, there are found positive reactions among apparently normal persons (young adults without clinical evidence of tuberculosis in any form and with no suggestive history).

Brown and Petroff[1] in a study correlating clinical and laboratory experience find the test of greater value to them as a control of the therapeutic regimen than as a diagnostic measure. It parallels the subcutaneous tuberculin reaction in that a negative reaction in the tuberculous individual is of more value than a positive one in determining which patients need treatment. They have found the reaction of value, too, in predetermining which patient will be benefited and which harmed by exercise and activity.

Lewis[2] has critically studied the reaction and has come to the conclusion that certain inherent defects will limit its usefulness. He suggests some modifications of the technic, however, such as increasing the time of fixation and increasing the quantities of complement and antigen in the effort to overcome the merely transient binding of complement that has possibly been interpreted by some workers heretofore as true deviation. It is his impression that it is unsafe to apply the reaction to the diagnosis of tuberculosis unless as a matter of confirmation of a clinical decision.

While Lewis notes that the common constituent of all the extractive antigens is alcohol soluble and more or less thermostable, some investigators (Wilson, von Wedel, Stoll and Neuman) use a lipoid-free bacillary antigen, bringing into the foreground the problem of the relative importance of the lipoids and the proteins as specific antigens. While the research of Warden[3] would place the greatest emphasis on the fats and lip-

1. Brown, Lawrason, and Petroff, S. A.: Clinical Value of Complement Fixation, Am. Rev. Tuberc. 2: 525 (Nov. 18) 1918.
2. Lewis, P. A.: The Complement Fixation Reaction as Applied to Tuberculosis, Am. Rev. Tuberc. 3: 129 (May) 1919.
3. Warden, C. C.: Function of Fats in Immune Processes; Pneumococcus and Streptococcus Immunity, J. Infect. Dis. 24: 285 (March) 1919.

oids, Small's[4] work with lipoid-free antigens would have to be interpreted in a way directly opposite.

Dyche and Much, it will be recalled, based their theory of "partial antigens" in tuberculosis on the supposition that the antibodies were of two varieties, both demonstrable by complement deviation. The one type was formed against the lipoids of the tubercle bacillus; the other against the proteins. They proceeded to immunize their patients with the object of increasing whichever type of antibody was found to be deficient.

It is evident that the reaction in its present stage cannot serve the physician as a foundation for his diagnosis. As confirmatory evidence it has some value. In a case with doubtful signs and symptoms and a continued negative reaction, the probabilities for the nontuberculous nature of the ailment are increased, while a persistently positive reaction would, in such a case, strengthen the presumption that we are dealing with an active lesion. With these limitations recognized, the test is useful.

DIET IN RELATION TO THE TEETH

The importance which the so-called focal infections have lately assumed as sources of disease has brought new prominence to the relation of the teeth to such infections. Indeed, pyorrhea alveolaris has tended to overshadow the far more widespread defects of carious teeth in which the conspicuous damage penetrates rather than surrounds these structures. If further evidence of the almost universal incidence of dental caries were needed, the records of the systematic examination of pupils in the public schools would testify to the degree of prevalence of teeth defects. The underlying causes are still unknown. They have usually been sought in local bacteriologic conditions within the mouth, if one may conclude from the emphasis that dentists place on oral hygiene. They seem not to realize that the presence of bacteria in itself never causes disease: we have millions of bacteria in our intestine and still thrive. What harm do the micro-organisms do in the mouth?

Evidently much depends on our powers of resistance. Disease of many sorts is the outcome of the presence of micro-organisms along with the lack of resistance or immunity factors. Facts in harmony with such a hypothesis seem to have been brought to light through the recent researches on scurvy. Zilva and Wells,[5] who have had unusual opportunities for studying scorbutic animals at the Lister Institute in London, have convinced themselves that the mildest degree of scurvy which could just be discovered at the postmortem examination produced well defined changes in the structure of the teeth; and in their numerous examinations they have not observed a single exception to this statement. In advanced cases of scurvy, in guinea-pigs and monkeys, the teeth were apparently sound, but useless, since they had been loosened by the gradual absorption of the cement membrane of the alveolar sockets, which had left exposed that portion below the neck. As a result, Zilva and Wells state, there must have occurred that periostitic pain or something analogous which follows in the case of human patients who are suffering from shrunken alveoli. These teeth also presented, in addition, all the appearances of the changes of senility.

The British observers regard the most striking changes in the teeth brought about by a scorbutic diet as a sort of fibroid degeneration which they designate as "fibrosis." It is believed that the characteristic structural metamorphoses in the dental pulp are not dependent on an inflammatory condition, but are referable directly to an altered metabolism or to constitutional changes due to diet. In the complete "pulpar fibrosis" of Zilva and Wells, "no trace of cellular organization, no trace of cell nuclei, no trace of interstitial cement substances can be found anywhere. Nerves, cells, blood vessels and odontoblasts have all shared the process of fibrification and are no longer recognizable. The fine cellular connective tissue, which is but a loose mass of network in the normal state, has either become grossly hypertrophied or quite obliterated, and its place taken by a new firm, fibrous structure, devoid of cells, nuclei, or any regular arrangement of constituted parts." In a scurvy tooth, the condition persists right up to the apex of the root; the change appears to start first in the odontoblastic cells at the top of the pulp, working down toward the apex, followed by distended blood vessels and hemorrhage; then complete fibroid degeneration follows.

If we may believe the new evidence, which deserves a respectful hearing, the teeth are among the parts of the organism first affected by scorbutic causes. Damage may be detected in the teeth before any other symptoms are discovered. For this reason it is not at all unlikely that tooth defects arise owing to faulty diets that are not clearly recognized beforehand. Zilva and Wells remind us of the contention of Hess[6] of New York that children not infrequently suffer from a "latent scurvy" which is a state of malnutrition that can be diagnosed only by the improvement in the state after the administration of an antiscorbutic. If such unrecognized conditions are widely prevalent, they may help to elucidate the hitherto unexplained prevalence of tooth decay, and they furnish an added argument for renewed efforts to make human dietaries as wholesome as our scientific knowledge, supplemented by food instincts, will permit.

4. Small, J. C.: Preparing Bacterial Antigens, J. Immunol. 3: 413 (Sept.) 1918.

5. Zilva, S. S., and Wells, F. M.: Changes in the Teeth of the Guinea-Pig, Produced by a Scorbutic Diet, Proc. Roy. Soc., B 90: 505, 1919.

6. Hess, A. F.: Subacute and Latent Infantile Scurvy, J. A. M. A. 68: 235 (Jan. 27) 1917.

Current Comment

THE ETHICS OF MEDICAL ADVERTISING

What is there about medical advertising, or advertising having a medical or quasimedical slant, that so often causes the advertisement copy-writer to abandon those principles of honesty and common sense which govern the advertising of most meritorious products? Products which are sufficiently good to stand on their own merits and which, when advertised in a nonmedical way, are described truthfully and with not more than the permissible amount of exaggerated puffery that goes with all advertising, are, when they enter the medical or quasimedical field, presented to the public in such a way as to cast discredit on the whole field of advertising. These thoughts are provoked by an advertisement that has recently appeared in certain medical journals on "Adams Chewing Gum." The product itself is one that certainly needs no misstatements or quibbling to stimulate its sale. The advertisement in question is entitled, "The Care of the Mouth," and is made up largely of what purports to be a quotation from an article by a pediatrician. There are two things wrong with the advertisement. First, the reader is given the impression that the quoted article has appeared comparatively recently; it appeared about eight years ago. Second, the quotation has been garbled and the writer is made to say things that he never said. The parallel indicates the liberties that have been taken:

ORIGINAL ARTICLE	AS QUOTED IN ADVERTISEMENT
"THE child naturally rebels against THE CLEANSING PROCESS while it is VERY ill and therefore if some more attractive and efficient way can be found to accomplish the same result, we ought to take advantage of it. THE USE OF CHEWING GUM seems to offer the best relief. It is attractive to the child . . . ," etc.	"A child naturally rebels against MOUTH cleansing while it is ill or peevish, and therefore if some more attractive and efficient way can be found to accomplish the same result, we ought to take advantage of it. "ADAMS PEPSIN CHEWING GUM seems to offer the best relief. It is attractive to the child . . . ," etc.

The portions that fail to coincide have been put in small capitals. Aside, altogether, from the medical aspects of the case; aside from the morality or ethics of the matter, THE JOURNAL maintains that the liberties which the Adams Chewing Gum concern had taken with the article have weakened rather than strengthened the "copy." These advertisements were for medical journals. The average physician, in reading the advertisement as it appeared, would immediately have his suspicion aroused. This in itself is bad advertising. The reader, knowing that the average physician does not, in scientific articles appearing in medical journals, generally recommend proprietary products, would jump to the conclusion that, if such an article was written, it probably had a venal origin, or else it was probably written by a man of little repute. The chewing gum concern would have made a stronger appeal had they quoted from the article verbatim, and then added their own comment to the effect that if the profession wanted a chewing gum here was one the manufacturers could recommend. In 1919, as never before, honesty in advertising is the best policy.

RELATION OF OPEN PNEUMOTHORAX TO THE TREATMENT OF EMPYEMA

The report of the empyema commission at Camp Lee,[1] and the experiences of various camps, emphasize the advantages of the delayed operation in empyema due to hemolytic streptococci. It will be recalled that the empyema following streptococcus pneumonia differs from the empyema after lobar pneumonia. In the former the fluid forms coincidently with the pneumonia, the pneumonic process and the toxemia being the most important features, and the pleuritis seemingly of secondary importance. The patients are intensely cyanotic and toxic, often presenting the picture of impending asphyxia. The advantage that has been claimed for the early operation was drainage, which accomplished the removal of both toxic material and living organisms, and in addition relief of the mechanical embarrassment to respiration caused by the presence of a large amount of fluid. Graham and Bell[2] have made important and interesting experiments on animals and on the human cadaver, the results of which seem to prove, however, that the mechanical embarrassment to respiration is almost sure to be aggravated, instead of improved, by the creation of an open pneumothorax. These investigators call attention to important relationships between the amount of air entering the thoracic opening and the amount of air entering the lungs. If an opening is made into the chest cavity, part of the total amount of air which enters the chest will enter by the opening in the chest wall; but of course only the air which enters through the trachea is effective in carrying on respiration. Thus it comes about that to prevent asphyxia, respiration must be increased in rate of depth; and the greater the opening in the chest cavity, the greater will be the demand for compensation in respiratory rate or depth. It must be remembered that in pneumonia the amount of air taken into the lungs is limited already by consolidation or plugging of the air channels and alveoli; hence the demand for air is increased still more as the opening in the chest further diminishes the amount of air going into the lungs, and the degree of asphyxia already present is increased. Graham and Bell state that "a normal human adult should be capable of withstanding for a short time an opening of 51.5 sq.cm. (5 by 10 cm., or 2 by 4 1/10 inches); but whenever the amount of air taken in the lungs is limited by the presence of an active pneumonia, the size of the pleural opening compatible with life becomes smaller." They believe also that the present conceptions of pneumothorax are erroneous in that they are based on the assumption that when an opening is made in the chest one lung is

1. The Empyema Commission: Cases of Empyema at Camp Lee, Va.: Preliminary Report, J. A. M. A. 71:366 (Aug. 2); 443 (Aug. 16) 1918.

2. Graham, E. A., and Bell, R. D.: Open Pneumothorax: Its Relation to the Treatment of Empyema, Am. J. M. Sc. 156:839 (Dec.) 1918.

collapsed, an assumption which implies that the mediastinum constitutes a rigid partition between the two pleural cavities. On the contrary, they find in their experiments that the mediastinum is so mobile that any increase of pressure in one pleural cavity pushes it over to the opposite side, so that the two lungs are compressed equally. No such condition is possible, therefore, as collapse of one lung and maintenance of respiration with the other lung in a chest with a normal mediastinum. If, on the other hand, the mediastinum has been made rigid by induration as a result of long standing inflammation, or if it has become fixed by adhesions, then a pleural opening will not produce the same pressure changes on the two sides. The advantages of the delayed operation in empyema are made more evident in the light of these observations on the physiologic mechanics of the thorax. Graham and Bell thus summarize these advantages: 1. There is less danger of creating an open pneumothorax in the delayed operation because there is likely to be a circumscribed abscess shut off by adhesions from any communication with the free pleural cavity. 2. Even if an open pneumothorax is created, the patient is in much better condition to withstand its harmful effect because (*a*) the subsidence of the active pneumonia has the effect of making the area of air inlet to the lungs larger than when the lung parenchyma is involved in the pneumonia process, so that the pleural opening is incapable of producing the same amount of harm; (*b*) the presence of adhesions and induration of the mediastinum tend to make it less mobile; (*c*) the patient's need of oxygen is less, and (*d*) the respiratory compensation is more efficient, owing to a diminished toxemia. 3. The patient is in a better condition to withstand the shock of the operation. 4. There is less danger of creating a septicemia from the absorption of organisms from the fresh wound. Finally, the fluid can be withdrawn early by aspiration as often as it accumulates in any considerable amount, thus removing the toxic material and organisms without endangering the patient.

"CINCHOPHEN": FORMERLY "ATOPHAN"

It will be remembered that the Federal Trade Commission adopted the names arsphenamin and neoarsphenamin for the drugs first introduced as "salvarsan" and "neosalvarsan," respectively; the terms barbital and barbital sodium for the substances first introduced as "veronal" and "veronal sodium," and the word procain as the name for the compound first marketed as "novocain." In issuing licenses for the use of the patents on these drugs, the commission stipulated that the drugs should be sold under the new American title unless the firm desired to use a new trade designation, in which case the titles chosen by the commission should be given equal prominence. The Council on Pharmacy and Chemistry has cooperated with the Federal Trade Commission and has adopted the new names as the descriptive names which appear in New and Nonofficial Remedies. The Chemical Foundation, Inc., which has purchased some 4,500 German-owned patents, many of them for synthetic drugs, proposes to continue the wise policy of the Federal Trade Commission by requiring that those who receive licenses for the use of patents for synthetic drugs must use a common designation for each drug selected by the foundation. "Cinchophen" has been selected as the designation for the substance introduced as "atophan" (also described in the U. S. Pharmacopeia under "phenylcinchoninic acid"). In consideration of this action on the part of the Chemical Foundation, and also because physicians found it difficult to use the pharmacopeial name "phenylcinchoninic acid," the Council on Pharmacy and Chemistry has recognized the contracted term "cinchophen" as a name for the drug introduced as "atophan." It is hoped that physicians will support this simplified and nonproprietary nomenclature in the same spirit with which they adopted the terms "arsphenamin," "barbital" and "procain."

OILY OPPORTUNITIES

The following note was received from a physician in New York City:

> I received the enclosed letter yesterday and think it deserves publicity. It seems to me, that physicians should be warned against buying Oil Stock at this time, from people whom they know nothing about. Particularly from one whose business should be to take care of the sick and not trying to make easy money out of other physicians. I know enough about Oil Stock products to know that 99 per cent. of them are fakes.

The enclosure referred to was a printed letter in imitation typewriting, signed by, and on the stationery of a physician in southern Texas. The physician in question described himself as "just a plain old doctor" (our records show that he was born in 1881) who had been "wrestling with disease for the past twelve years" (our records show that he was graduated and licensed in 1910). He was, so the letter stated, "personally interested in doctors and their success" and, while he had "made some money" in a "big practice," he had made much more money during the past six months by "investment" than he had ever made out of the practice of medicine. When the oil field business of Texas began to boom, it occurred to this physician, so he says, that "we Texas people had just as well . . . get our share of all that money as leave it all for the northern and eastern capitalists." This hardly explains why the doctor is offering a fellow practitioner two thousand miles away in the northeast part of the country a chance to get in on the ground floor. There is, of course, only "a small amount of our stock for sale," and the physician would "personally like to see some of my doctor friends come in on this." A postscript to the letter adds that the territory which the Texas doctor is developing is just between a well that is "making 300 barrels at top of sand," and the place "where the big wells flow." The doctor hopes, "fraternally," that the physician to whom he is addressing this printed letter, will "decide to come in." He is certain that "there is something doing in the oil business"—and we are inclined to agree with him. THE JOURNAL does not undertake to say that the possibilities offered are good, bad or indifferent. Certain it is, however, that however good a gamble the matter may be,

it is a mighty poor investment. When strangers are offered an entrance on the ground floor, it is always wise for them to watch their step—the cellar door may be yawning.

RECOGNITION BY LABOR OF VALUE OF SCIENTIFIC RESEARCH

During these days of unrest the casual observer, as well as the trained student of sociology, may feel that the demands for higher standards of living by industrial workers have wholly overshadowed all attempts at progress in scientific or other endeavor. The passing of a resolution by the American Federation of Labor at its Atlantic City convention, recognizing the ultimate dependence of labor on scientific research, as noted in our News Department several weeks ago, is a hopeful sign. It furnishes evidence that the American Federation of Labor realizes that progress made in raising the standard of living by methods of readjustment is, of necessity, limited, and that in order to pass this naturally prescribed limit the results of scientific research must be applied to industry. The praise indirectly bestowed on the activities of the various governmental branches of scientific research in the preambles to the resolution[1] is well merited. In Great Britain special research commissions have been concerned with scientific studies of hours of labor in relation to health; of the effects of factory work on the health of prospective mothers; of infant welfare; of pure food and milk supplies, and even of such detailed matters as the securing of proper vitamin content in food. Already in this country interesting and important researches have developed knowledge relative to fatigue and production; to the mental effects of prolonged work; to the lighting of industrial establishments, and particularly to such subjects as fire and accident prevention. With strict science as a basis industrial and sociological progress will be well founded.

1. We reprint here the resolution, including the preambles, which were omitted in previous publication:

WHEREAS: Scientific research and the technical application of results of research form a fundamental basis upon which the development of our industries, manufacturing, agriculture, mining, and others must rest; and

WHEREAS: The productivity of industry is greatly increased by the technical application of the results of scientific research in physics, chemistry, biology, and geology, in engineering and agriculture, and in the related sciences; and the health and well-being not only of the workers but of the whole population as well, are dependent upon advances in medicine and sanitation; so that the value of scientific advancement to the welfare of the nation is many times greater than the cost of the necessary research; and

WHEREAS: The increased productivity of industry resulting from scientific research is a most potent factor in the ever-increasing struggle of the workers to raise their standards of living, and the importance of this factor must steadily increase since there is a limit beyond which the average standard of living of the whole population cannot progress by the usual methods of readjustment, which limit can only be raised by research and the utilization of the results of research in industry; and

WHEREAS: There are numerous important and pressing problems of administration and regulation now faced by federal, state, and local governments, the wise solution of which depends upon scientific and technical research; and

WHEREAS: The war has brought home to all the nations engaged in it the overwhelming importance of science and technology to national welfare, whether in war or in peace, and not only is private initiative attempting to organize far-reaching research in these fields on a national scale, but in several countries governmental participation and support of such undertakings are already active; therefore, be it

Resolved, by the American Federation of Labor in convention assembled, That a broad program of scientific and technical research is of major importance to the national welfare and should be fostered in every way by the federal government, and that the activities of the government itself in such research should be adequately and generously supported in order that the work may be greatly strengthened and extended; and the Secretary of the Federation is instructed to transmit copies of this resolution to the President of the United States, to the President pro tempore of the Senate, and to the Speaker of the House of Representatives.

THE SEARCH FOR "CICATRIZING SUBSTANCES"

The application of accurate methods of measurement, of quantitative procedures, in any branch of science marks a step in the direction of progress. This has been quite as true in medicine as in other fields, such as physics and chemistry. Eye defects are corrected through accurate measurement; metabolic upsets are ascertained through urinary analysis; gastric disturbances are diagnosed through the quantitative examination of stomach contents; febrile symptoms are ascertained by thermometric readings, and blood pressure is evaluated with the help of a manometer. Perhaps these few illustrations will suffice to dispel the impression of uniqueness which may be generated by the application of mathematical laws and formulas to the problems of healing wounds. This procedure has been introduced by Carrel and his associates[1] in their war-time studies of wound healing. The technic involves the accurate measurement of the area of the wounds, to which sterilized cellophan is applied for this purpose, the edges being outlined with a pencil. The area of the drawing can then be ascertained. According to Carrel, cicatrization of a wound is due to two different factors: contraction and epithelization, the former being the more important. Du Noüy[2] maintains that when the wound is kept aseptic, its rate of cicatrization can be represented by a geometric curve and expressed mathematically. One variable is the age of the patient. Given the latter and the area of the wound, so we are told, one can forecast the rate of normal healing. Aside from its prognostic value, the quantitative study of wound areas has made it possible to ascertain the possible usefulness or harm of various antiseptics which the war has brought forth in large numbers for trial. Most of them are reported to be irritating and more or less detrimental to the normal progress of cicatrization. Du Noüy[2] now asserts that no such product as a "cicatrizing substance" has yet been discovered. The ideal conditions of perfect and most rapid healing is realized, he states, when the wound is kept practically sterile, or deprived of pathogenic micro-organisms such as cocci, diplococci and streptococci.

1. Carrel, A., and Hartmann, A.: J. Exper. M. **24**: 429 (Nov.) 1916. Du Noüy, P. L.: Ibid. **24**: 451, 461 (Nov.) 1916; **29**: 329 (April) 1919. Carrel, A.: Ibid. **29**: 93 (July) 1917. Du Noüy, P. L.: Ibid. **25**: 721 (May) 1917. Carrel A., and du Noüy, P. L.: Ibid. **26**: 279 (Aug.) 1917.

2. Du Noüy, P. L.: On the General Expression of the Law of Cicatrization of Wounds, Am. J. Physiol. **49**: 121 (June 1) 1919.

Aviation and Altitude.—Fifteen to 20 per cent. of all the men who pass an ordinary medical examination are unfit to ascend to the altitudes now required of the military aviator. On the other hand, these tests pick out a small group of 5 to 10 per cent. who, without apparent immediate physical deterioration, withstand oxygen deficiency corresponding to altitudes of 20,000 feet or more—Henderson, *Science*, May 9, 1919.

Medical Mobilization and the War

Personnel of the Medical Department

For the week ending August 1, there were 10,431 officers in the Medical Corps, a decrease of 634 from the previous week. The Medical Reserve Corps contained 3,087 officers. The total number of physicians discharged since the beginning of the war is 22,448.

General and Base Hospitals

On July 15 there were thirty army general and base hospitals operating. Some of these had already been given a definite date for closing. The following tabulation indicates the location of the hospitals and the approximate date when closed:

1. G. H. Plattsburg, N. Y.
2. G. H. Port Ontario, N. Y., August 1.
3. G. H. Fort Porter, N. Y.
4. G. H. Otisville, N. Y.
5. G. H. New Haven, Conn., September 1.
6. G. H. Fox Hills, N. Y.
7. G. H. Colonia, N. J.
8. G. H. Cape May, N. J., July 20.
9. G. H. Carlisle, Pa.
10. G. H. Fort McHenry, Md.
11. G. H. Takoma Park, D. C.
12. G. H. Hampton, Va.
13. G. H. Roland Park, Md.
14. G. H. Oteen, N. C.
15. G. H. Biltmore, N. C.
16. G. H. Spartanburg, S. C.
17. G. H. Fort McPherson, Ga.
18. G. H. Detroit, August 1.
19. G. H. Fort Benjamin Harrison, Ind.
20. G. H. Fort Sheridan, Ill.
21. G. H. Fort Snelling, Minn., August 1.
22. G. H. Fort Des Moines, Iowa.
23. G. H. Hot Springs, Ark.
24. G. H. Denver, Colo.
25. G. H. Fort Bayard, N. M.
26. G. H. Whipple Barracks, Ariz.
27. G. H. Fort Douglas, Utah, August 1.
28. G. H. San Francisco.
29. B. H. Fort Riley, Kan.
30. B. H. Fort Sam Houston, Texas.

General hospitals at Parkview, Pa., and Eastview, N. Y., were closed July 15. Base hospitals at the following camps, not shown above, are scheduled to be made camp hospitals: Bowie, Texas; Devens, Mass.; Dix, N. J.; Dodge, Iowa; Gordon, Ga.; Grant, Ill.; Jackson, S. C.; Lee, Va.; Lewis, Wash.; Meade, Md.; Pike, Ark.; Shelby, Miss.; Sherman, Ohio; Taylor, Ky.; Upton, L. I., N. Y.

HONORABLE DISCHARGES, MEDICAL CORPS, U. S. ARMY

NOTE.—In the following list, L. signifies lieutenant; C., captain; M., major; L. C., lieutenant-colonel; Col., colonel.

ALABAMA

Birmingham—Belden, A. E. (L.)
Cohn, M. H. (L.)
Brundidge—Bean, J. F. (C.)

ARIZONA

Komatke—Warner, A. R. (C.)
Winslow—Pritchard, J. L. (L.)

ARKANSAS

Blytheville—Usrey, M. O. (C.)
Branch—King, W. J. (C.)
Little Rock—Murphy, P. (C.)
Rogers, F. O. (C.)
Paris—Jewell, I. H. (C.)
Piggott—Drace, C. W. (C.)

CALIFORNIA

Los Angeles—Ammann, F. X., Jr. (L.)
Ronan, R. R. (L.)
Oakland—Ward, J. M. (C.)
Richmond—Abbott, C. L. (M.)
San Diego—Wedgeforth, P. (C.)
San Francisco—McNamara, F. B. (L.)
San Luis Obispo—Jackson, P. K. (L.)
Miller, B. Y. (L.)
Santa Monica—Wight, T. H. T. (C.)
Stockton—Price, H. E. (L.)

COLORADO

Denver—Cecchini, A. S. (L.)
Kent, W. C. (C.)
Wade, L. H. (L.)

CONNECTICUT

Bristol—Sanborn, E. P. (C.)
Hartford—Landry, A. B. (M.)
Piante, U. (C.)
New Britain—Lyon, W. (C.)
New Haven—Rogers, O. F. (M.)
South Manchester—Burlingame, C. C. (L. C.)
Waterbury—Dalrymple, S. C. (C.)
Willimantic—Mason, L. I. (L. C.)

DISTRICT OF COLUMBIA

Washington—Breckinridge, S. D. (Col.)

FLORIDA

Chattahoochee — Greene, R. N. (M.)
Clearwater—Davidson, J. W. (L. C.)

GEORGIA

Americus—Smith, H. A. (C.)
Atlanta—Highsmith, E. D. (C.)
Key, C. T. (L.)
Dawson—Chappell, G. (C.)
Forsyth—Williams, G. W. (C.)
Hartwell—Meredith, A. O. (C.)

ILLINOIS

Bement—Field, A. (C.)
Canton—Johnston, C. J. (C.)
Chicago—Coleman, E. F. (C.)
Curry, L. T. (M.)
Cutting, L. D. (L.)
Dunham, R. W. (L.)
Eide, A. T. (C.)
Farrell, P. J. H. (L. C.)
FitzPatrick, G. (C.)
Gay, R. J. (M.)
Jared, V. M. (C.)
King, C. B. (C.)
McAuliff, G. R. (L.)
McCauley, W. B. (L.)
Mock, H. E. (L. C.)
Parker, B. R. (L.)
Rasmussen, C. W. H. (L.)
Wright, E. P. (M.)
Clinton—Thorpe, S. L. (C.)
De Kalb—Kane, J. P. (C.)
Havana—Morrill, P. G. (C.)
Jacksonville—Hardesty, T. O. (C.)
Kankakee—Hamilton, E. S. (C.)
Springfield—Copelan, I. C. (L.)

INDIANA

Anderson—Hunt, L. F. (C.)
Berne—Jones, D. D. (M.)
Brookston—Rariden, L. P. (C.)
Indianapolis—Aspy, J. A. M. (L.)
McBride, W. A. (C.)
Pebworth, A. C. (L.)
Marion—Daniels, E. O. (C.)
Waynetown—Roark, C. A. (L.)

IOWA

Cedar Falls—Heldt, T. J. (M.)
Colfax—Anspach, W. C. (L.)
Des Moines—Price, A. S. (M.)
Smith, C. F. (M.)
Hamburg—Danley, R. C. (C.)
Lisbon—Gardner, J. R. (M.)
Red Oak—George, A. B. (C.)

KANSAS

Baldwin City—Sheppard, C. E. (C.)
Grainfield—Winslow, G. H. (L.)
Junction City—O'Donnell, F. W. (L. C.)
Perth—Dillon, J. O. (C.)
Topeka—Miller, M. B. (C.)

KENTUCKY

Covington—Heisel, C. N. (C.)
Glasgow—Turner, Duffield, M. (C.)
London—Mason, J. B. (M.)
Louisville—Flexner, M. (C.)
Henry, M. J. (C.)
Jameson, J. B. (C.)
Spears, L. P. (M.)
Tracy, R. B. (L.)
Madisonville — Robinson, R. F. (C.)
Maysville—Harover, S. R. (M.)
Newport—Weber, F. C. (L.)
Paducah—Blythe, V. (C.)
Willingham, E. B. (L.)
Philpot—Kirk, J. A. (M.)
Pine Knot—Sievers, R. C. (C.)

LOUISIANA

New Orleans — Allgeyer, E. E. (L.)
McSween, J. C., Jr. (C.)
Royals, W. C. (L.)
Shreveport — Prudhomme, P. W. (L.)
Ragan, T. (C.)

MAINE

Augusta—Mann, L. L. (C.)
Farmington—Pratt, H. S. (L.)
Ross, A. M. (L.)

MARYLAND

Baltimore—Ensor, C. B. (M.)
Laubach, C. A. (C.)
Worthington, F. D. (L.)
Catonsville—Monmonier, J. C., Jr. (M.)

MASSACHUSETTS

Boston—Fairbanks, A. W. (M.)
Malden—Brown, R. N. (L.)
Northampton—Ball, A. N. (C.)
Springfield—Adams, W. B. (C.)

MICHIGAN

Adrian—Chase, A. W. (C.)
Bay City—Urmston, F. R. (L.)
Detroit—Bush, L. M. (L.)
Penberthy, G. C. (M.)
Flint—MacDuff, R. B. (L.)
Grand Rapids — Burling, W. M. (L.)
Roan, O. M. (L.)
Warnshuis, F. C. (M.)
Holland—Kools, W. C. (L.)
Houghton—Bridgman, W. R. (C.)
Kalamazoo—Mortcr, R. A. (L.)
Swartz Creek—Houston, J. (M.)

MINNESOTA

Albany—Kohler, D. W. (L.)
Minneapolis — Hamilton, A. S. (M.)
Maxeiner, S. R. (C.)
Neal, J. M. (L.)
New Ulm—Groebner, O. A. (L.)
Paynesville—Pilon, P. C. (M.)
Rochester—Goodwin, A. J. (M.)
Winne, W. R. (L.)

MISSISSIPPI

Hattiesburg—Draughn, D. M. (C.)
Natchez—Smith, H. M. (L.)
Pass Christian—Pratt, J. G. (M.)

MISSOURI

Clever—Williams, L. E. (L.)
Hollywood—Limbaugh, W. R. (L.)
Kansas City—Grier, M. E. (L.)
Hana, M. A. (M.)
Teachenor, F. R. (C.)
Palmyra—Stone, A. R. (L.)
St. Charles—Diehr, A. H. (C.)
St. Louis—Herrick, H. C. (M.)
McKellops, L. G. (L.)
Owen, R. E. (M.)
Pawelek, L. G. (L.)
Tilles, R. S. (C.)

MONTANA

Opheim—Sherrard, G. C. (M.)
Twin Bridges—LeClar, L. C. (C.)

NEBRASKA

Clatonia—Deardorf, B. M. (C.)
Fremont—Reeder, G. S. (L.)
Lincoln—Williams, B. F. (C.)
Lyons—Ryder, F. D. (C.)
Omaha—Hall, L. T. (C.)
Palmyra—Charlton, C. P. (L.)
Scottsbluff—Stoops, R. P. (C.)
St. Paul—Andrews, C. F. (L.)

NEW HAMPSHIRE

Littleton—Page, J. M. (L.)

NEW JERSEY

Arlington—Mutter, A. A. (L.)
Bayonne—Donohue, L. F. (L. C.)
Cedar Grove—Smith, H. G. (C.)
Collingswood—Jack, H. W. (L.)
Florence—Weber, J. F. (C.)
Freehold—Brown, H. S. (M.)
Glassboro—Duffield, M. (C.)
Jersey City—Cosgrove, S. A. (M.)
Paterson—Murn, C. J. (M.)
Phillipsburg—Torrence, J. M., Jr. (C.)
Plainfield—Hallock, F. M. (C.)
Summit—Baker, R. D. (M.)

NEW YORK

Amsterdam—Finch, L. H. (C.)
Batavia—Spofford, H. M. (C.)
Bolivar—Hackett, L. M. (L.)
Brooklyn—Brown, C. W. (L.)
Eckerson, L. B. (C.)
Napier, D. D. (M.)
Swan, E. L. (C.)
Vann, H. M. (L.)
Woodworth, L. J. (L.)
Buffalo—Eaton, E. L. (L.)
Metzen, J. A., Jr. (L.)
Byron—Bieber, E. (L.)
Ithaca—Holton, W. B. (M.)
Kingston—DeGarmo, P. W. (L.)
Long Island City — Stein, I. L. (C.)
Middletown—Moore, A. S. (M.)
New York—Bruner, A. B. (L.)
Cooney, T. E. (C.)
Edgar, R. D. (C.)
Gamrin, E. (L.)
Hartshorn, W. M. (C.)
Huntley, W. B. (L.)
Kertor, J. L. (L.)
Maher, T. F. (C.)
Post, W. G. H. (L.)
Roach, C. P. (M.)
Maher, T. F. (C.)
Ryan, W. B., Jr. (C.)
Somers, T. A. D. (L.)
Vincent, R. M. (C.)
Peterburg—Mann, C. M. (L.)
Philadelphia—Bu.y, R. W. (C.)

Rochester—Mitchell, H. D. (L.)
Wentworth, E. T. (M.)
Schenectady—Mann, H. M. (L.)
Seneca Falls—Lester, F. W. (M.)
Shrub Oak—Fechtig, A. G. (C.)
Syracuse—Kallet, H. I. (C.)
Watervliet—Krauss, C. A. (M.)

NORTH CAROLINA

East Bend—Benbow, J. T. (M.)

NORTH DAKOTA

Bismarck—Halgren, J. A. (C.)
Dawson—Pryze, R. C. (C.)
Mandan—Nickerson, B. S. (C.)

OHIO

Akron—Barton, E. W. (C.)
Ashtabula—Crosby, C. C. (C.)
Manchester—Conard, R. F. (M.)
Chatfield—Barth, K. H. (L.)
Cincinnati—Ravine, W. (C.)
Columbus—Allbritain, J. W. (L.)
Corning—McNerney, N. H. (C.)
Cuyahoga Falls — Searl, W. A. (M.)
Hanoverton—McHenry, J. B. (C.)
Massilon—Holston, J. D. (C.)
New Boston—Mills, A. B. (C.)
Sevile—Beach, J. L. (C.)
Steubenville—Biddle, J. K. (M.)
Tiltonsville—Morrison, P. (C.)
Toledo—Teter, J. S. (L.)

OKLAHOMA

Enid—Thompson, C. E. (C.)
Gates—Nylund, G. A. (C.)
Kiefer—Jones, E. (L.)
Mooreland—Triplett, T. B. (C.)
Muskogee—White, J. H. (C.)
Sapulpa—McCallum, C. L. (L.)
Tulsa—Hooper, J. S. (C.)

PENNSYLVANIA

Canonsburg — Donaldson, L. D. (L.)
Carlisle—Plank, E. R. (M.)
Cynwyd—LeBoutillier, T. (L. C.)
Erie—Rothe, W. R. (C.)
Harrisburg — Zimmerman, G. A. (L.)
Lock No. 4—Sickman, A. S. (L.)
Mahanoy City — Dolphin, J. F. (C.)
McKeesport—McCune, D. P., Jr. (C.)
McKees Rocks—Sierakowski, C. S. (L.)
Philadelphia—Brooke, J. A. (C.)
Carcerosa, H. L. (C.)
Kohn, L. W. (L.)
Pepper, O. H. P. (L. C.)
Shannon, F. P. (C.)
Somers, R. I. (L.)
Pittsburgh—Frye, D. W. (C.)
Goehring, C. (C.)
Pierce, W. I. (C.)
Sarchet, H. N. (L.)
Scranton—Davis, A. J. (M.)
Wheelock, F. R. (M.)
Shamokin—Gay, L. N. (L.)
State College—Dale, P. H. (C.)
Wellsboro—White, W. F. (L.)
West Chester — Hollingsworth, I. P. (C.)
Wilkes-Barre—Adams, E. A. (C.)
Williamsburg — Whittaker, R. R. (C.)
Windber—Smith, B. J. (L.)
Wyncote—Gordon, E. J. (M.)
York—Ellis, R. L. (L.)

SOUTH CAROLINA

Abbeville—Richie, E. W. (L.)
Columbia—Fulmer, W. E. (L.)
Kingstree—Jacobs, C. D. (M.)

TENNESSEE

Bethpage—Wright, T. F. (C.)
Bradford—Hudkins, I. N. (L.)
Chattanooga—Skelton, C. A. (L.)
Steele, J. B. (L. C.)
Collierville—Miller, J. S. (C.)
Jackson—O'Connor, F. J. (L.)
Memphis—Baughman, C. B. (C.)
Westmoreland — Dotson, W. S. (C.)

TEXAS

Cuthand—DeBerry, M. W. (L.)
Fredericksburg—Wiemers, W. J. C. (L.)
Houston—Culter, E. M. (C.)
Humble—Jones, W. H. (L.)
Sherman—Venable, S. C. (L.)
Snyder—Bannister, J. M. (C.)
Waxahachie—Rayburn, C. E. (C.)
Whitesboro—Coleman, R. H. (L.)
Yorktown—Nowieski, L. W. (L.)

UTAH

Ogden—Nelson, H. W. (L.)
Wardleigh, C. E. (L.)
Payson—Stewart, L. D. (C.)

VIRGINIA

Coeburn—Wolfe, I. E. (C.)
Norfolk—Faulkner, G. E., Jr. (L.)
Pocahontas—Sowers, M. L. (C.)
Spotzylvania—Harris, W. A. (L. C.)
Wicomico Church — Downing S. (L.)

WASHINGTON

Tacoma—DeWitt, C. H., Jr. (L.)
Willard, H. G. (M.)

WEST VIRGINIA

Benbush—Myers, C. W. (C.)
Century—Farasey, P. (L.)
Harrisville—Patton, G. C. (L.)
Logan—Lawson, J. C. (L.)
Upper Tract—Moore, C. L. (C.)

WISCONSIN

Abbotsford—Devine, G. C. (C.)
Brodhead—Rowe, L. B. (L.)
Hiles—Halsey, H. A. (C.)
Menomonie—Grannis, I. V. (M.)

WYOMING

Rock Springs—Chambers, O. (M.)

NORTH CAROLINA

Hobbsville—Carter, T. L.
Huntersville—Lackey, M. A.

OHIO

Cleveland—Friedman, C. J.

PENNSYLVANIA

Lansdowne—Case, E. A.
Montgomery—Decker, P. H.
Philadelphia—Reeves, R. S.
Pottstown—Thomas, B. K.
Williamsport—Rewalt, R. K.

SOUTH CAROLINA

Charleston—Taft, A. R.

VIRGINIA

Quantico—Fackler, C. L.

WASHINGTON

Spokane—Rouse, H.

MEDICAL OFFICERS, U. S. NAVY, RELIEVED FROM ACTIVE DUTY

ARKANSAS

Aplin—Matthews, E. L.

CALIFORNIA

Alameda—Miller, H. A.
Los Angeles—Blake, W. P.

COLORADO

Denver—Epstein, W. A.

CONNECTICUT

New London—Lena, H. F.

ILLINOIS

Chicago—Alden, W. C.
Hedgecock, A. J.

INDIANA

Auburn—Leasure, J. K.
Vincennes—Curtner, M. L.

MAINE

Portland—Moulton, M. C.

MARYLAND

Baltimore—Warner, T. B.

MASSACHUSETTS

Boston—Briggs, M. T.
Kimball, J. C.
Malden—Whitcomb, C. A.
Newburyport—Healy, T. R.

MICHIGAN

Detroit—Lau, F. T.
Ironwood—Erickson, A. W.
Owosso—Arnold, A. L.

MINNESOTA

Euclid—Stuhr, J. W.
Minneapolis—Gowdy, R. A.

MISSISSIPPI

Jackson—Callaway, E.

NEW HAMPSHIRE

Manchester—Lightbody, W. R.

NEW JERSEY

Burlington—Anderson, R. D.

NEW YORK

Brooklyn—Gray, I. K.
College Point—Biffar, H. M.
Elmhurst—Mahnken, H. C.
New York—Brodhead, W. F.
Klein, E.
Loughlin, J. J.
McKee, C. S.
Myerson, M. C.
Schur, A. T.
Thomas, W. S.
New Lebanon—Barrett, M. O.
Richmond Hill—Blydenburgh, G. T.

ORDERS TO OFFICERS OF THE UNITED STATES PUBLIC HEALTH SERVICE

Surg. W. C. BILLINGS, proceed to Boston, Mass., stopping at Washington, en route, for conference for the study of hospital equipment and administration.

Surg. W. A. KORN, proceed to Whipple Barracks, Arizona, for inspection relative to the suitability for Public Health Service Hospital.

Surg. JOHN T. BURKHALTER, proceed to Anniston, Ala., for inspection relative to suitability for Public Health Service Hospital.

Surg. R. E. EBERSOLE, relieved at Ellis Island, N. Y., proceed to New Orleans, La., and assume charge of the Marine Hospital.

Passed Asst. Surg. ROBERT OLESON, proceed to Madison, Wis., to assist the State Health Officer in establishing an endemic index for the reportable diseases.

Passed Asst. Surg. C. L. WILLIAMS, proceed to New Orleans, La., to assist the State Health Officer in establishing an endemic index for the reportable diseases.

Passed Asst. Surg. W. L. TREADWAY, proceed to New York, to deliver two addresses at Teachers' College, Columbia University.

Passed Asst. Surg. A. R. SWEENEY, relieved at Fayetteville, N. C., proceed to the Marine Hospital, Stapleton, N. Y., for duty.

Passed Asst. Surg. C. V. AKIN, designated as epidemiologic aide to the health officer for the State of South Carolina to assist in establishing an endemic index for the reportable diseases.

Asst. Surg. W. S. DEAN, relieved from duty at the Bureau, Washington, D. C., proceed to Atlanta, Ga., to assist the State Health Officer in establishing an endemic index for the reportable diseases.

Asst. Surg. VANCE B. MURRAY, relieved at the Marine Hospital, San Francisco, Calif., proceed to Manila, P. I., and report to the Chief Quarantine Officer for duty.

Asst. Surg. CHARLES ARMSTRONG, proceed to Columbus, Ohio, to assist the State Health Officer in establishing an endemic index for the reportable diseases.

Asst. Surg. R. E. DYER, proceed to Little Rock, Ark., to assist the State Health Officer in establishing an endemic index for the reportable diseases.

Asst. Surg. M. V. ZIEGLER, proceed to Indianapolis, Ind., to assist the State Health Officer in establishing an endemic index for the reportable diseases.

Passed Asst. Surg. C. R. MILLER (Reserve), ordered to active duty in the Reserve Corps of the U. S. Public Health Service. Proceed to Greenville, S. C., for duty.

Asst. Surg. RICARDO MESTRE (Reserve), ordered to active duty in the Reserve Corps of the Public Health Service. Proceed to Boston, Mass., for duty under the Supervisor District No. 1.

Asst. Surg. FESSENDON N. OTIS (Reserve), ordered to active duty in the Reserve Corps of the Public Health Service. Proceed to the Marine Hospital, Boston, Mass., for duty.

Act. Asst. Surg. A. M. GANAWAY, proceed to St. Louis, Mo., and report to the Marine Hospital for duty.

Act. Asst. Surg. GEORGE HAYES, proceed to Nashville, Tenn., for duty in venereal disease control.

Act. Asst. Surg. D. B. HOLLOWAY, relieved at Newport News, Va., proceed to the Marine Hospital, Cleveland, Ohio, for duty.

Act. Asst. Surg. J. HOSKINS, proceed to Palo Alto, Calif., for duty in the Public Health Service Hospital.

Act. Asst. Surg. A. M. KILGORE, proceed to the Marine Hospital, New Orleans, La., for duty.

Act. Asst. Surg. STAFFORD B. SMITH, proceed to the states of New York, New Jersey, Pennsylvania for conference with Health Officers relative to venereal disease control.

Act. Asst. Surg. W. H. WALSH, proceed to Cape May, N. J., for inspection of Naval Hospital, relative to its suitability for use by the Public Health Service.

Influenza Deaths.—The *Weekly Health Index* for March 4, 1919, issued by the Bureau of the Census, shows that in thirty-one of the larger cities of the United States with a population of over 19½ million for the period of twenty-five weeks from Sept. 8, 1918, to March 1, 1919, inclusive, there were 72,009 deaths from influenza and 49,598 from pneumonia in all forms, giving, for the two diseases, a rate of 6.2 per thousand of population. There was said to be an excess of deaths from all causes of 96,679, or 5.0 per thousand of population as compared with the deaths and death rate for 1919.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

DISTRICT OF COLUMBIA

Medical Museum Secures Collection of Microscopes.—A large and quite complete collection of microscopes has been assembled at the United States Army Medical Museum, constituting an important addition to the exhibits of that valuable institution. Specimens are included from the crude models of centuries ago to the most modern and powerful of the compound microscopes of today.

Changes in Health Department Personnel.—Dr. John L. Norris, recently captain, Medical Corps, U. S. Army, has resumed his post as assistant health officer, the acting assistant health officer, Dr. John Paul Frey, having been appointed chief of the contagious disease service, vice Dr. Harry S. Bernton, resigned. Dr. Bernton is in charge of the medical work of the Washington Diet Kitchen Association.

Compensation for School Medical and Dental Inspectors.—The recent appropriation act for the District of Columbia failed to include the requested increased compensation for medical and dental inspectors, the basic salary still remaining $500 per annum, the sum fixed in 1903 when medical inspection of schools was first inaugurated. These inspectors will receive, however, the bonus of $240 provided for all federal and district employees receiving basic salaries of $2,000 or less. The chief medical inspector of schools was allowed maintenance for a motor vehicle.

Plans for Medical Society Building Approved.—Plans and specifications for the proposed home for the Medical Society of the District of Columbia have advanced to a point permitting expectations that bids will be invited early in September. The plans of the building have been submitted to the National Commission of Fine Arts and have received the complete approbation of that body. At a recent meeting of the building committee further progress in raising funds was announced. Generous contributions from the lay public have been received. Dr. Lawrence M. Hynson was elected secretary of the committee, succeeding Dr. Hanson T. A. Lemon, deceased.

Personal.—Lieut.-Col. Charles A. Ragen, M. C., U. S. Army, retired, has removed to New York City where he intends to practice medicine.——Dr. Daniel Webster Prentiss has recently returned from France where he was in charge of the surgical service at Base Hospital No. 106, Beau Desert hospital center, near Bordeaux.——Dr. Francis P. Morgan has resumed his work in the bureau of chemistry, Department of Agriculture, having recently returned from service in France with the A. E. F.——Among those recently returned from military to civilian activities are Major A. Barnes Hooe, Lieut.-Col. Luther H. Reichelderfer, Major Walter A. Wells, Major Henry F. Sawtelle and Capt. Howard Hume.

ILLINOIS

Medicine Man Fined.—J. W. Garrett, a colored medicine man of East St. Louis, is said to have been found guilty, July 19, of having violated the medical practice act, and to have been fined $100.

Deaths of 1918.—During 1918, 103,130 persons died in Illinois and of these, 44,605 were residents of Chicago. The death rate for the state was 16.3 per thousand population. The increase in the death rate is due to the influenza-pneumonia pandemic from which 32,334 persons died.

County Officers Reelected.—At the annual meeting of the Ogle County Medical Association, held at Rochelle, July 21, the following officers were reelected: president, Dr. Walter E. Kittler, Rochelle; vice president, Dr. Jesse C. Akins, Forreston, and secretary-treasurer, Dr. Josiah T. Kretsinger, Leaf River.

Hospital Items.—Plans have been drawn for the Tazewell County Sanatorium for Tuberculosis which is to be erected on a site recently purchased in Mackinaw. The building is to cost about $45,000.——A drive has been started at LaSalle to raise $40,000 with which to build an addition to St. Mary's Hospital.——Miss Grace Welch, Millburn, has been appointed superintendent of Jane McAllister Hospital, Waukegan.

Sanatorium for Piatt County.—Mr. Robert Allerton of Chicago, July 30, offered to sell 1,200 acres of land and donate the proceeds to Piatt County if the supervisors would use the amount for the erection of a tuberculosis sanatorium. This offer, amounting to a donation of about $400,000, was offered by Mr. Allerton as a memorial to his father, the late Samuel W. Allerton of Chicago, and his friend, the late John Phalen. The gift was formally accepted by the supervisors of Piatt County, August 2.

Illegal Practitioner Arrested.—Dr. H. R. Orbid, "the Eminent Dr. Orbid of Ohio," was arrested by the Illinois Department of Registration and Education for practicing medicine at Joliet without a license and was committed to jail until he secured a bondsman. As soon as he was released he departed for parts unknown and did not appear for the trial. Dr. Orbid was fined $200 and costs, of which his bondsman paid $100 and will be required to pay the remaining $100 if he cannot locate Orbid and present him in court. It was found that Orbid had in his possession an army officer's uniform with a variety of insignia so that he could assume any rank he desired. There is nothing to indicate that he was ever in the service.

Chicago

Postgraduate Nursing Course.—A postgraduate course of training in nursing is being held at the Illinois Training School for Nurses. The course lasts six weeks, with eight hours work each day for five days a week, and is being taken by eighteen women who hold executive positions in hospitals. Among the subjects are curriculum, planning of hospitals and nurses' residence, ethics of nursing and psychology.

Personal.—P. J. H. Farrell, Lieut.-Col., M. C., U. S. Army, and in command of Base Hospitals Nos. 81 and 81a, A. E. F., France, returned to Chicago, August 4.——Dr. Sophia Brumback has been appointed a member of the morals commission, succeeding Dr. Anna Dwyer.——Radium valued at $3,000 disappeared from the office of Dr. Frank E. Simpson, July 25. He has offered a reward of $500 for the return of the radium.

Site Bought by State.—A new hospital to be known as the State Surgical Institute for Children is to be built on the site of the baseball park at Lincoln and Polk streets. There will be three other hospitals on this site, the Illinois Charitable Eye and Ear Infirmary, a clinic for students of the Medical College of the University of Illinois, and the State Psychopathic Hospital. The land has already been bought for $400,000 and more than $1,500,000 has been appropriated to begin the construction of the hospital group.

Training School for Public Health Nursing.—More than 600 women registered, August 2, for the new course offered by the Chicago Training School for home and public health nursing. Five courses are offered by the school which opened, August 4, in the building formerly occupied by the Loyola Medical School on West Fulton Street. The board of directors for the institution includes, the Mayor, Mrs. Edward Hines, William A. Fetzer, Dr. William A. Evans, the Rev. Samuel Fallows, D. F. Kelley, Simon O'Donnell, and Miss Annie McKenzie, R.N. The Chicago Chapter of the American Red Cross has appropriated $15,000 to meet the expense of these courses.

INDIANA

Health Association Reorganized.—At a meeting recently held at Cedar Lake, the Lake County Health Association was reorganized and the following officers were elected: president, Dr. Otis B. Nesbit, Gary; vice presidents, Mr. G. Miller, East Chicago, and Dr. Eli S. Jones, Hammond, and secretary-treasurer, Mr. R. E. Hall, East Chicago.

Physician Reinstated.—In the case of Dr. George F. Smith, Bicknell, whose license was revoked by the State Board of Medical Registration and Examination, February 27, for alleged misrepresentation in regard to high school credits, an official order of reinstatement has been filed by the board with the clerk of Knox County as the result of an appeal made by Dr. Smith to the Knox Circuit Court.

Personal.—Dr. John N. Hurty, state health commissioner, is ill at his home in Indianapolis.——Dr. Clarence K. Jones has been appointed an alternate on the gynecologic staff of the Indianapolis City Hospital, and Dr. John W. Carmack has been appointed an alternate on the ear, nose and throat staff.——Dr. C. E. Edmondson, Bloomington, has been made

head of the new department of hygiene in the Indiana University.

Alleged Violation of Liquor Law.—Dr. Alonzo S. Neely, Indianapolis, is said to have been indicted by the Marion County Grand Jury for violation of the prohibition law on two counts, the first charged the physician with having sold liquor to persons unknown to the grand jury and the second, with having had whisky in his possession unlawfully.——Dr. George Koons, Indianapolis, who was recently convicted in the city court on the charge of having provided morphin for a woman addicted to the drug habit, was tried before the Indiana State Board of Registration and Examination, July 8, on another similar charge.

IOWA

New Officers.—The Austin Flint-Cedar Valley Medical Society held its annual midsummer meeting at Clear Lake, July 8 and 9. Dr. Oren M. Landon, New Hampton, was elected president; Dr. Albin B. Phillips, Clear Lake, vice president, and Dr. William A. Rohlf, Waverly, secretary.

Personal.—Dr. George F. Severs, Centerville, has been appointed president of the state board of health succeeding Dr. Walter L. Bierring, Des Moines.—Dr. Ralph W. Mendelson, Des Moines, is being sent by the Siamese government to have charge of the campaign against cholera in northern Siam.

MARYLAND

Personal.—George Milton Linthicum, Lieut.-Col., M. C., U. S. Army, Baltimore, who served overseas with Base Hospital No. 113, has returned to the United States.

Marine Hospital to Expand.—To relieve the congestion at the Marine Hospital, a new psychiatric ward of thirty beds will be erected within the next two months. It will be a one story building of temporary construction. The hospital is now filled to capacity, with 150 patients, which includes men who have been gassed or wounded overseas.

Government to Run Quarantine Station.—Baltimore city has again entered into contract, for a lease of the quarantine station by the government at $1 a year, until Congress makes an appropriation for the grounds and buildings. Suggestions from Health Commissioner Blake that the main office of the station be moved to Fort McHenry or elsewhere in the city, and that a quarantine boat be maintained at the Fort McHenry wharf have been accepted by the government. This will reduce the cost of operating the station and will do away with one or more boat crews.

Infantile Paralysis and Typhoid.—Infantile paralysis has again appeared in Baltimore during the past week, four cases and two fatalities having been reported to the health department. The cases were confined to children and Dr. John F. Hogan, Baltimore, chief of the bureau of communicable diseases, did not consider the situation one to cause alarm. What the officials of the department regarded with more concern were eighteen cases of typhoid from Baltimore, four of which came from the new Annex. Investigation has shown that several cases could be traced to outside infections. All the cases are under investigation. Fourteen cases of typhoid fever at Bakersville were reported to the state department of health by the Washington County Health Board. Samples of water taken from ten wells at Bakersville and vicinity have been sent to the health department for analysis. So far there have been no deaths from typhoid at Bakersville.

Permanent Exhibit at Fort McHenry.—With the assurance that U. S. Army General Hospital No. 2, at Fort McHenry, will be retained as a hospital for the treatment of wounded and diseased soldiers for at least a year longer, the officials there are planning to install a permanent exhibit of the surgical work and to have special days each week for visitors. Col. Junius H. McHenry, New York City, chief of the general surgical work, is anxious that this permanent exhibit of the treatment and cures among the wounded soldiers be shown at the hospital until the post is suspended. Collaborating with Colonel McHenry and the other officers are physicians at the Johns Hopkins Hospital and the University of Maryland who are convinced that this demonstration would prove invaluable to the medical students of the two institutions. The permanent exhibit will be along the lines of the one which attracted such favorable attention at the Medical and Chirurgical Faculty Building, but will be more comprehensive. The physicians at the post have achieved an excellent record in operations. Out of 400 patients operated on since last January, only one death directly attributable to an operation has occurred.

MINNESOTA

Public Health Associations Organized.—Thus far, auxiliaries of the Minnesota Public Health Association have been organized in eighty of the eighty-six counties of Minnesota.

New Officers.—At the fifty-fifth annual meeting of the Wabasha County Medical Society, held at Lake City, July 10, Dr. Jesse A. Slocumb, Plainview, was elected president; Dr. John T. Bowers, Lake City, vice president, and Dr. William F. Wilson, Lake City, secretary-treasurer. The next meeting of the association will be held at Zumbro Falls.

Personal.—Dr. Charles E. Smith, Jr., St. Paul, has assumed the duties of executive officer of the state board of health, succeeding Dr. Henry M. Bracken, resigned. Dr. Bracken is devoting his time to war risk insurance in conection with the United States Public Health Service.——Kenneth Taylor, Col., M. C., U. S. Army, St. Paul, has returned from France.——Dr. Oscar W. Holcomb, St. Paul, and Axel E. Hedback, Minneapolis, have been appointed members of the state board of health, succeeding Drs. Christopher Graham, Rochester, and Werner Hemstead, St. Cloud.

Supervision of Public Health Nurses.—Arrangements have been completed between the American Red Cross and the Minnesota Public Health Association which give the former organization supervision over, and responsibility for, public health nursing in Minnesota. The basic agreement is that the American Red Cross is to secure and place all permanent public health nurses, and help finance them and supervise them. This does not include demonstration nurses or hospital or sanatorium nurses. The association is to conduct public health educational, propagandist and legislative activities and to cooperate with the American Red Cross in all directions regarding public health, but is not to finance county or community public health nurses.

MISSISSIPPI

Colored Practitioners Meet.—At the meeting of the Mississippi Medical and Surgical Association (colored) held in Jackson, July 9, Dr. Daniel W. Sherrod, Meridian, was elected president; Dr. John H. Roby, Canton, vice president, and Dr. Robert L. Johnson, Jackson, secretary.

Hospital Items.—An attempt is being made to secure a bond issue of $8,000 from the city of Meridian with which to purchase the Matty Hersee Charity Hospital property and erect thereon a new modern hospital. At present the institution is being operated by the appropriation of $11,000 per year from the state and $5,000 from Meridian and $2,000 from Lauderdale County.——The board of trustees of the South Mississippi Charity Hospital, Ellisville, has petitioned the governor to call an extra session of the legislature to provide additional funds for the support of a hospital.——Officers of the Biloxi Hospital Association have started a drive for funds for the erection of a new modern hospital building for Biloxi.——A campaign has been opened to secure $250,000 for the Baptist Hospital, Jackson.

Personal.—Dr. C. D. Alexander, Vaiden, has been appointed health officer of Carroll County.——Dr. Robert B. Crisler, Satartia, sustained a severe injury to his arm recently when his automobile backfired.——Dr. Taylor H. Henry, Columbus, has been reelected health officer for Lowndes County.——Dr. Sylvan Myers, Vicksburg, has been elected health officer of Warren County.——Dr. Daniel J. Williams, Gulfport, has been reelected health officer for Harrison County.——Dr. J. B. Middleton, Grenada, has been reeapointed health officer for Grenada County.——Dr. William A. Carpenter, Meridian, has been reappointed health officer of Lauderdale County.——Dr. Thomas R. W. Wilson, Greenville, S. C., who has been in charge of the base hospital, Camp Shelby, has been made director of the hygienic laboratory of the state department of health, Jackson.

MONTANA

Hospital Training Institute.—The Second Montana Institute for Hospital Training in connection with the University of Montana was held at Missoula, from June 30 to July 12, under the charge of Prof. W. G. Bateman of the department of chemistry of the university.

Personal.—Dr. Ernest D. Hitchcock has been appointed state bacteriologist of Montana, succeeding the late Dr. Arthur H. McCray, Helena, and has assumed charge of the laboratory.——The widow of Dr. McCray has been appointed superintendent of public health nurses in Montana.

Public Health Association Organized.—At the final session at the conference of the state health board, held in Butte, July 9, the Montana Public Health Association was organized and the following officers were elected: president, Prof. W. M. Cobleigh, Bozeman; vice president, Dr. Harmon T. Rhoades, Choteau; secretary, Dr. William F. Coagswell, Helena; treasurer, Dr. Wilson A Russell, Hardin, and section heads, Dr. Louis W. Allard, Billings, public health administration; Dr. Caroline McGill, Butte, tuberculosis; Surveyor General Gerharz, Helena, sanitation and water works; Mrs. Harry B. Farnsworth, Missoula, child welfare; Dr. Patrick H. McCarthy, Butte, industrial hygiene, and Dr. Eugene G. Steele, Plentywood, health hygiene. The next meeting will be held at the same time and place as the annual convention of the Montana State Medical Association.

New State Officers.—The Montana State Medical Association held its annual meeting in Missoula, July 9 and 10, under the presidency of Dr. Edward W. Spottswood, Missoula. Helena was selected as the next meeting place and the following officers were elected: president, Dr. Edward M. Larson, Great Falls; vice presidents, Drs. Lawrence Stevens, Laurel, Patrick H. McCarthy, Butte, and Arter W. Deal, Lewistown; secretary-treasurer, Elmer G. Balsam, Billings, and delegate to the American Medical Association, Dr. Edward W. Spottswood, Missoula, the retiring president. The association also adopted the report of a committee which submitted the names of the following five members from which the governor will select one to be named as a member of the state board of health: Drs. E. M. Porter, Lewistown; Austin L. Ward, Havre; Arter W. Deal, Lewistown; Mark D. Hoyt, Glasgow, and Edward M. Gans, Judith Gap.

NEW JERSEY

Urge Memorial Hospital.—Women of Gloucester are making a determined effort to have a memorial hospital erected instead of a monument in memory of the 300 soldiers from Gloucester who went into the service. It is believed that they will be able to raise $25,000 for a hospital.

Drug Crusade Begun.—A crusade against the illegal sale of iodin, paregoric, castor oil and other such medicines by grocery stores and other places which have no license, has been started by the New Jersey State Board of Pharmacists. A tour is being made of each of the South Jersey towns. They claim that no one but a licensed druggist can sell such medicines.

NEW YORK

Combat Against Habit-Forming Drugs.—Federal officials have begun a campaign to stamp out the traffic in habit-forming drugs. In two raids, made July 16, seven persons were arrested, six charged with violation of the Harrison Narcotic Law, and the other, an alleged addict, was held as a material evidence.

Plan Home for Infirm Physicians.—The certificate of incorporation of the Physician's Home, among the incorporators of which are Drs. Graeme M. Hammond, Alexander Trautman, Daniel Cook, Max Einhorn, Silas F. Hallock, Robert T. Morris, and Albert G. Weed, all of New York City, was approved by Justice Ford, August 1. The purpose of the organization is to create and maintain a home for aged and infirm physicians and their wives or widows or to assist them in any other way feasible.

Development of Letchworth Village.—July 9, the governor opened and dedicated Stewart Hall, the school and recreation building of Letchworth Village, and laid the cornerstone of the new group of buildings for women. In his address on this occasion the governor stated that there were at least 33,000 mental defectives in the state, of which only 5,000 were properly provided for. Dr. Pearce Bailey, chairman of the State Commission on Feebleminded, made a strong plea for research into the cause of mental defects and especially urged the establishment of a pathologic laboratory at Letchworth Village.

Drug Law Fails in State.—Reports received from various up-state counties show that the Whitney antinarcotic law is almost wholly inoperative outside of New York City, because of failure of the legislature which passed the act to appropriate the necessary funds for its administration. The state department of drug control announces that in view of the lack of funds with which to carry out the provisions of the law, it will have to depend on individual physicians to report to the health authorities of the various counties drug addicts encountered in private practice. Thus far it is announced that the health authorities have received practically no reports from physicians. It is feared that this condition of affairs is likely to result in an illicit traffic in drugs outside of New York City that will render registration in New York City a farce. Albany has a clinic for drug addicts and it is likely that another will be opened in Buffalo.

New York City

Convalescent Home for Soldiers.—A convalescent home for discharged men from overseas suffering from nervous troubles has been opened in Bronxville. The Seabury Society of New York will maintain the home. The home is already filled but as fast as vacancies occur other patients will be received.

Typhoid in New York City.—During the second quarter of 1919, ninety-nine cases of typhoid fever were reported with twenty deaths, as against 268 cases for the corresponding quarter of last year. Of these cases 89 per cent. were confirmed by laboratory examination. The source of infection was traced in only 24 per cent. of the reported cases.

Health Department Gets Hospital Accommodations for Drug Addicts.—Secretary Daniels of the Navy has granted the use of the buildings at the Pelham Bay Naval Training Station to New York City for the treatment of drug addicts. This will provide accommodations for 1,600 patients within a brief period. The location is regarded as an exceptionally good one because it can be well guarded and secured against the smuggling of drugs which has been one of the difficulties with which the city has had to contend at all other institutions where it has attempted to care for drug addicts.

Many Bogus Diplomas Sold.—Assistant District Attorney De Coro announces that some one hundred New York "physicians," "dentists" and "druggists" face prosecution in the near future. The man arraigned for having sold these diplomas is Nicholas D. Clements of the Bronx, who, two years ago, was sentenced to two and one-half years in Dannemora prison for having sold talcum powder as aspirin. The diplomas for which Clements received from $100 to $150 each purport to be from the Southern Medical Institute, which went out of existence fifteen years ago. Clements asked for clemency in his promise to reveal the names of the seventy-five physicians and attorneys who purchased their credentials from him.

U. S. Public Health Service Takes Polyclinic Hospital.—The Polyclinic Hospital will be taken over by the U. S. Public Health Service, August 15. The institution will be used exclusively for the treatment of war risk insurance cases. The Public Health Service also took over in June, the old Hudson Street Hospital which was used by the Navy for the same purpose. There are accommodations for 450 patients in the Polyclinic and for 120 in the Hudson Street Hospital. Former soldiers who were insured, if ailments develop directly or indirectly from their war experience, will be treated at these hospitals. James L. Robinson, M. C., U. S. Army, is in charge of the Polyclinic and Dr. Richard A. Kearney of the Hudson Street Hospital.

OHIO

Salaries Increased.—The trustees of the Western Reserve University, Cleveland, have voted an increase of 20 per cent. to the salaries of the entire full-time instructing staff of the medical school.

Personal.—Frank Winders, Major, M. C., U. S. Army, Columbus, who has been for many months a director of the medical service of the Port of Embarkation, has been promoted to the rank of lieutenant-colonel, Medical Corps.——Dr. Edward M. Keefe has been appointed local surgeon for the New York Central system, with headquarters at Cincinnati.

Hospitals Must Register.—In compliance with the terms of the law passed by the legislature in March, which went into effect, June 25, every hospital and dispensary in the state must register immediately with the state department of health. The registration and report will serve as a basis for a survey of the hospital facilities of the state. A division of hospitals has been created in the state department of health to look after this survey.

Health Bureau Moved to Columbus.—The health activities of the state for the control of venereal disease have been placed on a more efficient basis by the removal of the bureau of venereal disease of the state department of health to the headquarters of the department of health in Columbus. This bureau was established at Cleveland a year and a half ago when the call of the War Department for antivenereal bureaus found the state without funds for the purpose. Dr. Harold

N. Cole, Cleveland, assumed charge of the bureau and served without compensation until federal funds were awarded to the state for carrying out the program. He has now resigned from the bureau but will continue to serve as consultant.

The Hughes Act.—Arrangements are under way in many counties for meetings of the district advisory committees immediately after the law goes into effect, August 9. These councils are composed in each county, of the mayors of all cities under 25,000 population and the chairmen of all township boards of trustees. At the meeting for organization each council will select the district board of health which will appoint a full-time district health commissioner and other employees from a civil service list. Cities of more than 25,000 population will institute separate health districts, with organization similar to that now in force excepting that health officers and other employees will serve on a whole-time basis and will be appointed under civil service rules.

OREGON

Woman's Medical Club Elects Officers.—At the annual meeting of the Portland Woman's Medical Club, June 10, Dr. Jessie M. McGavin was elected president; Dr. Emma M. Wickstrom, vice president; Dr. Ethel Gray, secretary, and Dr. Amelia Ziegler, treasurer.

Alumni Election.—At the seventh annual meeting of the Alumni Association of the University of Oregon Medical Department, Portland, June 24, the following officers were elected: president, Dr. A. A. Whitham, Portland; vice presidents, Drs. Louis Buck, Portland; Carl Hoffman, Woodland, Wash.; Adalbert G. Bettman, Portland, and James L. Wooden, Clatskanie; secretary, Dr. George A. Cathey, Portland, and treasurer, Dr. Katherine Manion, Portland.

New State Officers.—The forty-fifth annual meeting of the Oregon State Medical Association was held in Portland, June 26 to 28, under the presidency of Dr. Charles M. Barbee, Portland, and the following officers were elected: president, Dr. Burpee L. Steeves, Salem; president-elect, Dr. Joseph A. Pettit, Portland; vice presidents, Drs. William B. Neal, Eugene; Charles S. Edwards, Prineville, and Hugh S. Mount, Oregon City; secretary, Dr. Clarence J. McCusker, Portland; treasurer, Dr. Jessie M. McGavin, Portland, and councilors, Drs. Philip J. Bartle, Eugene, and Abram L. Houseworth, Marshfield.

Personal.—Ralph A. Fenton, Major, M. C., U. S. Army, Portland, who has been in charge of eye work in the Army of Occupation, has been relieved from duty with the Third Army and has returned home.——Dr. Elbert E. Cable, Portland, who has been stationed at Newport News, Va., and New York City as government specialist in community sanitation, has returned to Portland and has been appointed medical supervisor of the War Risk Insurance Bureau for the Thirteenth District, which includes the states of Oregon, Washington and Idaho.——Justin M. Waugh, Major, M. C., U. S. Army, Hood River, who recently returned from abroad, has been promoted to the rank of lieutenant-colonel, Medical Corps.——Dr. Esther C. Pohl Lovejoy, Portland, has been appointed chairman of the American women's hospitals with headquarters in New York City.

PENNSYLVANIA

Personal.—Col. William J. Crookston, Pittsburgh, chief surgeon of the Twenty-Eighth Division in France, has been appointed associate chief medical inspector of the Pennsylvania Department of Health. He will succeed Dr. Howard L. Hull, Camp Hill, who has been appointed chief medical inspector of the Pennsylvania Department of Health.—— Dr. Edward Martin, commissioner of health, announces the following appointments in his department: Dr. Edward W. Bixby, Wilkes-Barre, and Miriam Wagner, Philadelphia, assistants in the genito-urinary division; Dr. Roy Ellithorp, Kane, Highland Township, Elk County, and Dr. James Allen, Ranchtown, Crawford Township, Clinton County, health officers.

Phiadelphia

Little Mothers' Leagues Formed.—The Child Federation has been cooperating with the public school playground department of the board of education in forming little mothers' leagues to instruct the children in the care of their baby brothers and sisters. The Little Mothers' Leagues have been established in the public schools and in the Lighthouse Settlement, Neighborhood Center and Reed Street Settlement. At the playgrounds the classes are taught by the teachers as a regular part of the playground activities, and at the settlements the classes are in charge of nurses from the division of child hygiene.

To Ask Funds for College.—Plans are afoot for a fund-raising campaign for the Woman's Medical College of Pennsylvania, according to a statement made by Dr. Martha Tracy, dean of the college. The campaign, which will be conducted entirely by women, will open, October 13, and continue until October 23. The Woman's Medical College is the only medical school in the United States which admits women exclusively. The appeal for funds is occasioned by the need for extending and developing the work of the medical college for a new residence hall for nurses and students, and for enlarging and increasing the facilities of the Woman's College Hospital, which is connected with the medical college.

WISCONSIN

Poliomyelitis in Milwaukee.—There have been reported thirty-six cases of infantile paralysis in Milwaukee and all hospitals have set aside beds for the treatment of these cases. The city council has authorized the publication and distribution of pamphlets instructing the people how to prevent contagion and how to deal with the disease.

Personal.—A welcome home banquet was given Dr. Gerhard A. Bading, formerly mayor of Milwaukee, at the Milwaukee Athletic Club, July 15. Dr. Bading has recently returned from the Philippine Islands where he served as captain, M. C., U. S. Army.——Charles H. Stoddard, Major, Wis. N. G., Milwaukee, has been appointed chief surgeon of the state.

State Board Notes.—Dr. Gustave Windesheim, Kenosha, has been appointed a member of the state board of health. ——Dr. Cornelius A. Harper, Madison, state health officer, has been reappointed a member of the state board of health. ——Drs. George H. Ripley, Kenosha; Henry W. K. Abraham, Appleton; Charles W. Rodecker, Holcombe, and John M. Dodd, Ashland, have been reappointed members of the state board of medical examiners.

Hospital Items.—Drs. S. Wade and John C. Doolittle, Lancaster, have opened their new hospital in the Wright Block. ——The Milwaukee County Free Dispensary has been opened at Grand Avenue and Fifth Street, Milwaukee. This is the first unit of the new county hospital which is to be established on the former Schandein estate.——Fifteen physicians of Oshkosh have purchased an apartment building and have organized the Oshkosh Clinic which has been incorported by Drs. Clarenden J. Combs, Henry W. Morgenroth and Charles H. Nims.

CANADA

Personal.—Dr. Perry G. Goldsmith, Toronto, lieutenant-colonel in the Canadian Army Medical Corps, has been appointed a Commander of the Order of the British Empire. ——Lieut.-Col. Graham Chambers, Toronto, who has been overseas since May, 1915, sailed for home on the *Adriatic*, July 28.

University News.—Principal Bruce Taylor of Queen's University, Kingston, Ont., has reported to the board of trustees that it may be necessary to transfer the clinical work of the medical department to Ottawa, when the new hospital is completed, as the population of Kingston makes the supply necessarily inadequate.

Medical Council of Canada.—The annual session of the Medical Council of Canada was held in Ottawa a short time ago, under the presidency of Dr. Richard Eden Walker, New Westminster, B. C. The Medical Council of British Columbia relinquished their local provincial examination for their license in favor of the examination as set by the Medical Council of Canada. Another matter of importance discussed was the negotiation with Great Britain and other countries looking toward reciprocal acknowledgement of licenses. An amendment to the Canada Medical Act providing for these proposed changes will be drafted and presented to the next annual session of the council. Examinations were ordered to be held in Montreal and Halifax in October, 1919, and in Toronto, Winnipeg and Vancouver in June, 1920. Dr. James C. Connell, Kingston, was elected president.

GENERAL

Smallpox on Board Ship.—On the arrival of the troopship *Mobile* at New York, smallpox was dicovered on board and more than 5,000 passengers on the ship were placed in temporary quarantine.

Bulletin of the League of Red Cross Societies.—The first two numbers of a new publication the *Bulletin* of the League

of Red Cross Societies published at Geneva, Switzerland, have just been issued. The first number is devoted to the history of the league and its organization, and the second number to the proceedings of the medical conference held at Cannes, France, in April, and already reported in THE JOURNAL.

Gastro-Enterologists Elect Officers.—At the annual meeting of the Gastro-Enterologists' Association, held in Atlantic City, N. J., June 9 and 10, the following officers were elected: president, Dr. Thomas R. Brown, Baltimore; vice presidents, Drs. Franklin W. White, Boston, and Joseph Sailer, Philadelphia; secretary, Dr. Frank Smithies, Chicago; treasurer, Dr. Clement R. Jones, Pittsburgh; recorder, Dr. Horace W. Soper, St. Louis, and Councilor, Dr. Walter A. Bastedo, New York City.

Advisory Medical Committee to Children's Bureau.—An advisory medical committee has been appointed to the Hygiene Division of the Children's Bureau, United States Department of Labor. It consists of three members, Dr. Julius Hess, Chicago, representing the Section on Diseases of Children of the American Medical Association; Dr. Richard Smith, Boston, representing the American Pediatric Society, and Dr. Howard Childs Carpenter, Philadelphia, representing the American Child Hygiene Association.

National Tuberculosis Association Elects Officers.—At the annual meeting of the National Tuberculosis Association, held at Atlantic City, N. J., June 15 and 16, the following officers, executive committee members and directors were elected: president, Dr. Victor C. Vaughan, Ann Arbor, Mich.; honorary vice presidents, Sir William Osler and George E. Bushnell, Col., M. C., U. S. Army; vice presidents, Dr. Gerald B. Webb, Colorado Springs, and John M. Glenn; secretary, Dr. Henry Barton Jacobs, Baltimore; treasurer, Henry B. Platt, New York City.

Bequests and Donations.—The following bequests and donations have recently been reported:

Dr. Steven Seymour memorial endowment fund, $100,000 for the endowment of hospital beds in memory of Dr. Steven Seymour of Chicago by the will of his daughter, Mrs. Katherine E. Brown.

Milliken Memorial Hospital, New Orleans, a donation of $5,000 by Dr. Theolon Quayle.

The Associated Jewish Charities, Chicago, a bequest of $50,000 by the will of Louis M. Stumer.

St. Luke's Hospital, South Bethlehem, Pa., $1,000; Allentown, Pa., Hospital, $4,000, by the will of Mr. Araminta A. Herman.

Conference of Women Physicians.—An international conference of women physicians is to be held at 600 Lexington Avenue, New York City, between the dates of September 15 and October 24, at which every medical woman in America and Canada is invited to be present. About thirty women physicians from foreign countries have already accepted invitations to be present. Belgium, China, Denmark, England, France, Holland, Italy, Norway, Scotland, Sweden and Switzerland will be among the countries represented. The hostess for the conference is the Social Morality Committee, National Board of Young Women's Christian Association, and the general purpose is to confer as to the attitude of social education along the lines of health and sex problems, together with the responsibilities related to them in foreign countries, and to discuss possibilities dealing with individual national problems.

The Education of Wounded Soldiers.—In a report issued from the Office of the Surgeon-General of the Army, July 8, it is stated that the staff supervising the work of educational service for the benefit of wounded soldiers at forty army hospitals totals 2,385 persons, consisting of 252 officers, 509 noncommissioned officers, 241 enlisted men, 1,274 reconstruction aids, 78 male and 31 female civilian employees. The largest staff was at Fort Sheridan, Ill., the number engaged in the work being 181. Walter Reed General Hospital at Washington, D. C., had the second largest staff—138. Of 2,524 patients receiving surgeon's certificate of discharge, 2,408 were able to resume their old occupations, or were not in need of retraining. Enrolments in war artcrafts increased from 18,829 in April to 20,641 in May. Those in war academic studies increased from 30,358 to 31,248. The grand total of students in all forms of education was 56,850.

Research Fund Appropriations.—Appropriations were made, June 26, from the Educational Research and Development Fund of the United States Interdepartmental Social Hygiene Board to the following institutions for the purpose of organizing or completing the organization within those institutions of departments of hygiene, the curriculums of which shall include "courses and conferences in informational hygiene, and courses, conferences and training in the applications of hygiene, emphasizing with appropriate and due proportion and proper tact and persistency the serious importance of the venereal diseases, their causes, carriers and prevention, and emphasizing at the same time the other important facts and applications of general hygiene, individual hygiene, group hygiene and intergroup hygiene":

Los Angeles, Calif., State Normal School; Natchitoches, La., Normal School; Maryland Normal and Industrial School (colored); Maryland State Normal School; Michigan State Normal School; Winona, Minn., Normal School; University of New Mexico; Valley City, N. D., Normal School; Reed College, Portland, Oregon; Bellingham, Wash., Normal School; University of Utah; Alcorn, Miss., A. & M. College (colored); Woman's Medical College of Pennsylvania; Harvard University; University of Missouri; Colorado State Teachers College; New York State Teachers College; Cornell University; University of South Carolina; Northwestern University; University of Pennsylvania; Cheney, Wash., State Normal School; Milwaukee, Wis., Normal School; Indiana University, Bloomington, Ind.; University of North Carolina.

An appropriation from this fund was made to a committee of psychologists under Dr. J. R. Watson of Johns Hopkins for

"the purpose of investigating the informational and educative effect on the public of certain motion picture films used in various campaigns for the control, repression and elimination of venereal disease."

Appropriations have been made to the following institutions from the Scientific Research Fund of the board for the purpose of discovering more effective medical measures in the prevention and treatment of venereal diseases:

1. Leland Stanford Junior University Medical School:
   "Investigation into more effective treatment in acute and chronic gonorrhea." Under the direction of Dr. R. L. Rigdon, Chief, G. U. Clinic, and Dr. A. S. Spaulding, Professor of Gynecology.
   "The permeability of the meninges to antisyphilitic drugs—an attempt to increase their permeability." Under the direction of Dr. H. C. Mehrtens, Professor of Neurology, and Dr. Thomas Addis, Director of the Laboratory.
   "Investigation into more effective methods of treating syphilis." Under the direction of Dr. H. Alderson, Associate Professor of Medicine.
2. University of Michigan College of Medicine and Surgery:
   "A research for an improved method of demonstrating the spirochaeta pallida in human tissues." Under the direction of Dr. A. S. Warthin, Director of Pathological Laboratory.
3. Johns Hopkins Medical School:
   "Development of new synthetic drugs for the treatment of gonorrhea." Under the direction of Dr. E. C. White, Experimental Chemist to Brady Urological Institute.
   "Manufacture and investigation of a series of new organic compounds in the treatment of syphilis." Under the direction of Dr. D. M. Davis.
   "Manufacture and investigation of a series of penetrating organic dyes in the treatment of chancroids." Under the direction of Dr. E. O. Swartz.
   "Experimental study of various methods of early treatment of venereal infection with the object of developing simpler technic, more efficient and less expensive drugs." Under the direction of Dr. William Jack.
4. University of Wisconsin Medical School:
   "An attempt to prepare mercurial and arsenical compounds which have a predilection for the central nervous system, in the hope of finding drugs more useful than any known in the treatment of syphilis of the central nervous system." Under the direction of Dr. A. S. Loevenhart, Director of Laboratory.
5. University of Nebraska College of Medicine:
   "(a) Investigation relative to the development of an internal urinary antiseptic."
   "(b) Investigation of the value of certain anilin dyes in the treatment of gonorrhea." Both under the direction of E. G. Davis, M.D., Director of Pathological Laboratory.
6. St. Louis University College of Medicine:
   "Studies in infection by gonococci." Under the direction of R. A. Kinsella, M.D., Director of the Department of Experimental Medicine.
7. Woman's Medical College of Pennsylvania:
   "A serological study of syphilis in pregnant women and new-born children with special reference to the efficacy of the accepted methods of syphilitic treatment." Under the direction of Bertha M. Meine, M.D., Director of Research Department.
8. Washington University School of Medicine:
   "The laboratory (biological) investigation of the latent syphilitic as a 'carrier'." Under the direction of Martin F. Engman, M.D., Professor of Dermatology.
   "A study of hereditary transmission of syphilis." Under the direction of P. C. Jeans, M.D., Instructor and Associate in Pediatrics, and Jean B. Cooke, M.D., Associate in Pediatrics.
9. Cornell University Medical College:
   "Serological study of the gonococcus group." Under the direction of John C. Torrey, Ph. D., Professor of Hygiene.
10. Jefferson Medical College of Philadelphia:
    "A series of studies for the recognition and diagnosis of spirocheta pallida in venereal diseases, and the effect of various drugs

and materials as germicidal agents against spirocheta pallida." Under the direction of Randle C. Rosenberger, M.D., Professor of Hygiene and Bacteriology.

11. Yale University Medical School:
"Effect of anilin dyes, particularly Gentian Violet, on the gonococcus with reference to the growth of the organism in media containing the dye, and with reference to the effect on organisms in tissue (therapeutic effect)." Under the direction of J. M. Flint, M.D., and J. W. Churchman, M.D., Professors of Surgery.
"An intensive study of methods for the isolation and identification of the gonococcus with a view to the determination of the homogeneity or heterogeneity of strains and their etiological relationships." Under the direction of George H. Smith, M.D., Assistant Professor of Department of Pathology and Bacteriology.
"The demonstration of syphilitic nature of unusual lesions encountered at the postmortem table." Under the direction of M. C. Winternitz, M.D., Professor of Pathology and Bacteriology.

12. Union University Medical Department, Albany:
"For studies on the nature of the Wassermann reaction." Under the direction of Thomas Ordway, M.D., Dean and Associate Professor of Medicine.
"An attempt to produce generalized infection in lower animals with spirocheta pallida or with gonococcus." Under the direction of George S. Graham, M.D., Professor of Pathology, and W. M. Baldwin, M.D., Professor of Anatomy.

13. University of Minnesota Medical School:
"A study of the permeability of bacterial membranes, particularly the organisms of venereal disease." Under the direction of W. P. Larson, M.D., Chief, Department of Bacteriology and Immunology, and J. F. McClendon, Ph.D., Associate Professor of Physiology.
"Investigation of the chemical and physical properties of the cerebrospinal fluid in the luetic and nonluetic." Under the direction of L. G. Rowntree, M.D., Chief, Department of Medicine, and Charles E. Nixon, M.D., Instructor in Nervous and Mental Diseases.
"Investigation of phenol alcohol derivatives in relation to their antisepsis and chemotherapy of the gonococcus and spirochaete." Under the direction of A. B. Hirschfelder, M.D., Chief, Department of Pharmacology, and H. G. Irvine, M.D., Assistant Professor of Dermatology and Syphilis.

14. Harvard University Medical School:
"An investigation of the properties contributing to the toxicity of arsphenamine, neoarsphenamin and analogous products." Under the direction of Reid Hunt, M.D., Professor of Pharmacology.

FOREIGN

Red Cross Appropriations.—The American Red Cross has appropriated $65,000 to enable the American Women's Hospital Association to send a mobile hospital unit to Serbia for relief work in connection with typhus and other epidemics. Of this amount $25,000 is in cash and the balance in supplies.

Society Organized for the Study of Dietaries.—The *Policlinico* announces that the Societa per lo studio della Alimentazione has been recently organized at Florence to study and coordinate research on questions of food for man and animals and to serve as a link between different fields of research and activity in this line. It is proposed to publish a journal and to have courses of lectures delivered to popularize normal standards for nutrition.

Serbia's Greatest Needs.—The death rate from tuberculosis in Serbia during the German occupation amounted to 1,453 per hundred thousand of population. There was also an alarming increase in infant mortality, typhus and influenza. In order to remedy this condition Col. Homer Folks of the Red Cross, who has recently made an exhaustive survey of the Balkan States, recommends the following necessities for Serbia: money, trained medical workers, health officers, medicines, hospitals, clinics, dispensaries, trained nurses, organized public health agencies, district health nurses, and educational campaigns for combating the usual epidemics of typhus and influenza, and the always present diseases of tuberculosis and scarlet fever.

Tribute to Golgi.—Having reached the age limit of 75, Camillo Golgi retires from the chair of general pathology and histology at the University of Pavia, but he still retains charge of the institute connected therewith where he has been uninterruptedly at work for almost fifty years. A scholarship has been founded in his honor by his friends and pupils, the scholarship to be given to the orphan of some physician killed during the war. At an imposing ceremony he was presented likewise with a gold medal and souvenir album signed by the citizens of Pavia, with other honors. His discovery of the stain which first revealed the finer structure of the nervous system was made during his service in a small hospital at Abbiategrasso, remote from the centers of learning. The Nobel prize in medicine in 1906 was divided between Golgi and Ramon Cajal. Golgi is a senator and is of course an honorary member of many neurologic and other scientific societies at home and abroad.

Memorial Hospital in London.—At an organized meeting held at the House of the Royal Society of Medicine, July 17, and presided over by Lord Redding, chief Justice of England, plans were discussed for the American Memorial Hospital to be erected in London at a cost of about ten million dollars. The purpose of the hospital is outlined in the following resolution: "That in commemoration of the cooperation of the medical men of the United States and of Great Britain during the European War, and to strengthen the friendship between the two nations, the American Hospital for Great Britain be, and is hereby founded for medical and surgical treatment of all classes, irrespective of creed, or nationality and for the promotion of scientific study and research." The following have been elected members of the American Medical Committee of the hospital: Drs. Albert J. Ochsner and Franklin H. Martin, Chicago, William J. and Charles H. Mayo, Rochester, Minn., and Rudolph Matas, New Orleans. Ambassador Davis heads the government council of the hospital, and the members chosen for the medical committee in Great Britain include Sir William Osler, Sir Arbuthnot Lane, Sir Humphrey Rolleston, and Sir John Bland Sutton.

LATIN AMERICA

Personal.—Dr. Ricardo Mesa Torres of Taltal, Chile, has just returned to his country after spending several months in the United States obtaining information in regard to medical and public health matters.

Sanitation in Uruguay.—At the suggestion of the secretary of public works, the government has decided to appoint a commission composed of physicians and engineers in order to study and report on the plans for sanitary works in various towns located in the interior of the country.

MEXICO LETTER

Mexico, July 21, 1919.

Yellow Fever Quarantine Still in Force

No new cases of yellow fever have been reported either in Yucatan or in the neighboring states. The port of Progreso has been dropped from the schedule of some of the steamboat companies to avoid the troubles caused by the existing quarantine. Although the Yucatan authorities are urging the raising of the quarantine on account of the losses suffered by the state, the department of public health has not granted as yet this demand.

Repeal of the Prohibition Penalty

The governor of Sonora has repealed the decree he had issued providing the death penalty for those dealing in alcohol.

Trade in Opium

A well organized corporation, the object of which was to smuggle into the United States large quantities of opium, has been discovered. It seems that this smuggling has been going on very smoothly for several years and that the opium received from China and stored in Mexico since before the war was reshipped to the United States in the form of a fluidextract called by the dealers "cooked opium," which was put in cans and sent through the custom houses as castor oil.

Malaria in the Army

It is reported that malaria is prevailing to an alarming extent among the troops on field duty in the zone north of Vera Cruz, in the neighborhood of the port of Tampico. The war department will take necessary measures to control the disease or at least to diminish its prevalence.

A Gift from Viscount Cowdray

Mr. David Muirhead, president of the British Society of Mexico, has received from Viscount Cowdray, the former Sir Wetman D. Pearson, a cablegram from London stating that Lord Cowdray and his wife have decided to give 1,000,000 pesos (about $500,000) for the construction, equipment and maintenance of the new "Hospital Cowdray" to be founded in Mexico. Viscount Cowdray is one of the oldest oil men of Mexico.

Prize for the Discovery of Typhus Germ

The newspaper *El Universal* has just offered a prize for the discovery of the germ that causes tabardillo (typhus fever). The person who in the opinion of the National Academy of Medicine achieves this will receive $25,000, the amount offered by Felix Palavicini, the manager of *El Uni-*

versal. Mr. Palmicini has long been a promoter of noble endeavors. When secretary of public education he sent all medical quacks before the courts of justice. As a journalist he was a warm friend of the Allies. At present he is an earnest advocate of closer relations between Mexico and the United States and every week is devoting a certain space in his journal to scientific medicine. The conditions governing the contest relative to the discovery of the typhus germ will be approved by the Academy of Medicine before they are published.

Personal

Dr. Ernesto Cervera has been admitted as a member of the section of bacteriology of the Academy of Medicine after the thesis on hemolytic streptococci presented by him was approved by the section. Dr. Cervera is a professor in the school of medicine. He completed his studies in the Pasteur Institute of Paris.

Deaths

Edward Cowles ● Plymouth, Mass.; Dartmouth Medical School, Hanover, Mass., 1863; College of Physicians and Surgeons in the City of New York, 1863; aged 82; captain and assistant surgeon, U. S. Army, from 1863 to 1872; resident physician and superintendent, Boston City Hospital, from 1870 to 1879; medical superintendent, McLean Hospital, Waverly, Mass., from 1879 to 1893; professor of mental diseases in Dartmouth Medical School from 1885 to 1914 and thereafter emeritus professor; instructor in mental diseases in Harvard Medical School from 1889 to 1914; trustee from 1890 to 1908 and nonresident lecturer on mental diseases at Clark University, Worcester, Mass., since 1904; one of the best known alienists of New England; author of many monographs on hospital construction, training of nurses and mental diseases; died at his home, July 25.

Malcolm McKinnon, Sandpoint, Idaho; Trinity Medical College, Toronto, Ont., 1895; aged 52; president of the Bonner County Medical Society in 1917; formerly surgeon to the Fosston (Minn.) Hospital; commissioned captain, M. C., U. S. Army, Nov. 8, 1918, and on duty at Camp Funston, Kan., and honorably discharged, Dec. 5, 1918; was instantly killed in an automobile accident near Baker City, Ore., recently.

Julius Francis Henkel, Detroit; Detroit College of Medicine and Surgery, 1896; aged 46; appointed lieutenant-colonel and chief surgeon of the Michigan National Guard, 1905; who had been in the military service since 1891, and in 1907 was elected president of the Detroit Light Infantry; a member of the Association of Military Surgeons of the United States; died at his home, July 22.

Isaac H. Cadwallader ● St. Louis; Rush Medical College, 1875; aged 68; lecturer on materia medica and therapeutics in the Woman's Medical College for three years; a member of the staff of the Missouri Baptist Sanitarium since 1891, and physician in charge since 1900; died suddenly at his summer home at Arthur's Point, Minn., July 22, from cerebral hemorrhage.

Daniel Arnold Babcock, Fall River, Mass.; New York Homeopathic Medical College, New York City, 1874; aged 66; a member of the staff and secretary of the advisory board of the Union Hospital, Fall River; died in Boston, May 25, from cerebral hemorrhage.

George E. Pogue, Greeley, Colo.; Detroit College of Medicine and Surgery, 1892; aged 58; formerly of Grand Rapids, Mich.; a member of the Colorado State Medical Society; died at the Woodcroft Hospital, Pueblo, Colo., July 8.

Frederick William Koehler, Buffalo; University of Buffalo, N. Y., 1889; aged 52; a member of the Medical Society of the State of New York; medical inspector of the Buffalo Department of Health; died at his home, about July 18.

Andy Jackson Stewart ● Provo, Utah; College of Physicians and Surgeons, Baltimore, 1904; aged 46; a specialist on diseases of the eye, ear, nose and throat; died at his home, May 25, from pneumonia.

Daniel Malloy Prince, Laurinburg, N. C.; Medical College of the State of South Carolina, Charleston, 1871; aged 71; a member of the Medical Society of the State of North Carolina; died at his home, July 16.

Melanchthon Marion Ritchie, Harrisburg, Pa.; Jefferson Medical College, 1874; aged 69; a member of the Medical Society of the State of Pennsylvania; a veteran of the Civil War; died at his home, July 20.

Charles Conrad Abbott, Bristol, Pa.; University of Pennsylvania, Philadelphia, 1865; aged 76; a well known authority on animal and plant life in the United States; died at his home, July 29, from nephritis.

Louis Gally Wogan, New Orleans; Tulane University, New Orleans, 1903; aged 40; a member of the Louisiana State Medical Association; died in New Orleans, June 7, from pulmonary tuberculosis.

Thomas J. Brown, Winston-Salem, N. C.; Leonard Medical School, Raleigh, 1914; aged 32; a colored practitioner; also a pharmacist; died at his home, July 1, from septicemia, due to an infected wound.

William Albert Ross, Barrie, Ont.; Victoria University, Coburg, Ont., 1882; L.R.C.S. (Edin.) 1884; L.R.C.P. and S. (Lond.), 1885; aged 57; died at his home, May 15, from pernicious anemia.

William H. Becher, North Industry, Ohio (licensed, Ohio, 1896); aged 70; a member of the Ohio State Medical Association; a practitioner for fifty years; died at his home, July 16.

George W. Westbrook ● Ila, Ga.; Atlanta (Ga.) Medical College, 1889; aged 53; president of the Ila Bank; died at his home, July 19, from cerebral hemorrhage.

Fred Bayard Lyon ● Wichita, Kan.; Northwestern University Medical School, Chicago, 1903; aged 39; died at his home, July 20, from heart disease.

Josef Israel Manson ● San Francisco; University of Syracuse, N. Y., 1897; aged 49; died at Brockway, Lake Tahoe, Calif., July 28.

John Louis Irwin, Chicago; McGill University, Montreal, 1879; aged 59; died at his home in Maywood, Ill., July 31, from heart disease.

Thomas Howell White, Yonkers, N. Y.; Yale University Medical School, New Haven, Conn., 1862; aged 80; died at his home, July 21.

Alphonse Lanoue, Ghent, Minn.; Laval University, Montreal, 1902; aged 49; died at the home of his niece in Holyoke, Mass., July 15.

Sumner G. Berry, Ashley, Ill.; Kentucky School of Medicine, Louisville, 1888; aged 52; died at his home, May 27, from accident.

William S. Clarke, Litchfield, Ky.; University of Louisville, Ky., 1886; aged 67; died at his home, May 20, from nephritis.

Frank H. Good, Reading, Pa.; University of Pennsylvania, Philadelphia, 1878; aged 64; died in the Reading Hospital, July 26.

Frederick William Weber, Baltimore; Baltimore University School of Medicine, 1888; aged 69; died at his home, July 22.

John W. Hobart, Richmond, Va.; Boston University, 1875; aged 80; died at his home, May 3, from cerebral hemorrhage.

David Cary, Fort Wayne, Ind.; aged 79; a practitioner for forty-two years; died at his home, July 9, from senile debility.

Walter B. Cowan ● Dialville, Texas; Barnes Medical College, St. Louis, 1897; aged 47; died at his home, July 23.

John Wesley Monjar, Seneca, Pa.; Baltimore Medical College, 1899; aged 53; died at his home, July 9.

● Indicates "Fellow" of the American Medical Association.

Marriages

RALPH DE BALLARD CLARKE, Lieut., M. C., U. S. N. R. F., West Haven, Conn., to Miss Lucy Emeline French of Winter Hill, Mass., June 28

FRANK OSCAR BRUNCKHORST, Capt., M. C., U. S. Army, Hortonville, Wis., to Miss Amelia M. Rohrbeck of Wyocena, Wis., June 12.

HENRY FRANKLIN SCHANTZ, Reading, Pa., to Miss Irene G. Clark of Niagara Falls, N. Y., at Reading, July 23.

JOHN THOMAS PERRY, Greenwood, Ark., to Miss Edith Louise McCullough of Fayetteville, Ark., July 17.

HENRY W. EDWARDS to Miss Audrey Simpson, both of Los Angeles, at Pico Heights, Los Angeles, July 14.

CHARLES E. GOODMAN, Virginia, Minn., to Miss Esther Gomberg of Duluth, Minn., at Detroit, July 18.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

RESTORIA

"Restoria for Bad Blood" is sold by the Restoria Chemical Company of Kansas City, Mo. The label declares the presence of "alcohol, 34 per cent."—an admission that is required by the Food and Drugs Act. Restoria is sold as a sure cure for syphilis. It is "the Miracle Medicine," "the Medicine of Last Resort," it is "Safer—Surer—Cheaper than the Serum Treatments," it contains "no mercury—no arsenic, ask the druggist." No information, of course, is given as to what Restoria contains, except the information that the law demands. It is said to be "of French origin, and has been known and prescribed throughout Continental Europe for more than fifty years."

While Restoria is recommended for rheumatism, kidney trouble, lumbago, eczema, and the omnipresent "catarrh," it is especially and particularly featured for syphilis or "blood poison." Here are some of the things the booklet has to say regarding syphilis and its treatment with Restoria and by other means:

"RESTORIA goes to the seat of the disease. It cleanses the Blood, as it were, eradicating from it every trace of the Syphilitic virus."

"One month of RESTORIA treatment may be equal to the services of the most eminent specialist, for whose skill you would be required to pay hundreds of dollars."

". . . to the average doctor this dreadful malady [syphilis] is only a name, and the patient is looked upon as a horrible example, on whom he (the doctor) may practice and profit while he prescribes."

"The average physician is utterly incapable of handling this dreadful malady. He lacks the experience, but he will not tell you so. He will assume a knowledge he does not possess. He will do the best he can for you. He will fill you with mercury or arsenic, perhaps, and make a helpless wreck of you in time; and all the while charge you all the fee he can get."

"The unfortunate Syphilitic is considered common prey, and any physician is justified in trying anything on him, and charging three prices for the service."

Restoria was first brought to the attention of THE JOURNAL in November, 1917, by a letter from the Council of National Defense, written by the chairman of the Subcommittee for Civil Cooperation in Combating Venereal Diseases. The letter stated that the Restoria concern had had the effrontery to write to the Venereal Disease Committee of the Council of National Defense, asking for a recommendation of Restoria! More than a year later—in April, 1919—a physician informed THE JOURNAL that there was an effort to finance Restoria, and samples had been sent to him at the request of a friend who had been invited to take some of the stock.

An unopened, original bottle of Restoria was submitted to the A. M. A. Chemical Laboratory, and tests were made to determine the presence or absence of mercury, arsenic or iodids. The chemist's report may be summarized thus:

Restoria contains no mercury or arsenic, but does contain iodid, probably potassium iodid, and calculated to potassium iodid corresponding to 1.693 grams in 100 c.c. It also contains much vegetable extractive, some alkaloidal drug, and a bitter oil or oleo resin.

RECOMMENDED BY UNCLE SAM FOR MALARIA

Quinine, One of the Three Ingredients of the Famous Malaria Medicine, Dr. Williams No. 101 Tonic.

The United States Public Health Service at Washington recommends quinine for malaria, to which every reputable physician agrees. This is one of the ingredients of the popular malaria medicine, Dr. Williams No. 101 Tonic, which is prescribed by quite a number of prominent physicians throughout the malaria belt. They say they get better results from it with their patients than if they prescribed straight quinine. Dr. Williams No. 101 Tonic not only contains quinine, which kills the malaria germ, but also iron, which is a splendid tonic and increases the appetite. The third ingredient is magnesia, which regulates the bowels. Dr. Williams No. 101 Tonic is therefore a well balanced efficient remedy. Try a bottle. Your druggist can supply you. —Adv.

PUBLIC HEALTH REPORTS

VOL. 34 MARCH 21, 1919 No. 12

MALARIA.

A SERIOUS HEALTH PROBLEM OF NATION-WIDE CONCERN.

The public generally has no conception of the seriousness of [illegible] health problem in the [illegible]

which [illegible] can breed. The more general use of quinine as a household remedy together with a commendable diminution of faith in widely advertised patent medicines, is probably also responsible for some of the improvement observed.

[illegible] of malaria [illegible]

On the left is a reduced reproduction of a "patent medicine" advertisement which carelessly read—and probably most "patent medicine" advertisements are carelessly read—may give the impression that the United States government has recommended "Dr. Williams No. 101 Tonic." As will be seen by the reduced reproduction on the right, what the United States Public Health Service has said about the use of quinin in the treatment of malaria, was supplemented by the statement that the "diminution of faith in widely advertised patent medicines" was doubtless responsible for the fewer cases of malaria today. The advertiser of "Dr. Williams No. 101 Tonic" apparently overlooked the latter statement.

Correspondence

DRAINAGE AFTER CHOLECYSTECTOMY

To the Editor:—A very recent personal experience with a cholecystectomy and choledochotomy followed by T tube drainage of the common duct leads me to make some comments on the experience for the benefit of those practicing this procedure.

The most annoying symptoms following the operation, aside from the pain produced by coughing, sneezing and the like, were those referred to the stomach. These symptoms were similar to those experienced at intervals for years prior to the operation, and consisted of an almost continuous nausea accompanied by a terrific burning in the epigastrium. After a time vomiting would occur followed by a period of relief of the burning and nausea; but the act itself, which was resisted as long as possible, was accompanied by excruciating pain in the wound, and the muscular effort involved was sufficient to break one of the silkworm-gut stitches.

It was found that a quarter grain of morphin would give relief from these symptoms long enough to allow of several

hours' rest and the ability to take some food once in the twenty-four hours, so that for two weeks, the length of time the tube was allowed to remain, my daily diet consisted of a piece of toast and coffee. This resulted in the loss of 20 pounds in weight in the two weeks.

The withdrawal of the drainage from the bed of the gallbladder and the tube from the common duct was followed by the immediate relief of these symptoms and rendered the morphin unnecessary. The bowel end of the T tube was found occluded by a stone on its withdrawal, which accounted for the clay-colored stools and the large biliary drainage from the wound. This fact demonstrates the etiologic relationship between the stomach symptoms and the presence of foreign bodies in the gallbladder or common duct or the absence of bile from the intestine, or both.

I have been led to wonder why a tube is ever placed in the common duct. As George Crile said in a discussion of this subject before the Chicago Surgical Society, "Why drain a drain?" If the common duct is patent, the tube is not needed because it makes little difference whether pus or toxic material is drained into the bowel or outside the abdomen. It does no harm in the bowel. If the common duct is not patent, it must be made so before the operation is completed and the tube again is not needed. Then, too, the presence of the tube in the duct is not unproductive of harm. If it fits too tight it may cause necrosis of its walls. It is an invitation to the deposition of cholesterin and bile salts; and, lastly, it is the cause of distressing nausea, and vomiting and pyrosis, which militate against the patient's recovery.

It is in the hope that others who are obliged to undergo this operation may have a more satisfactory convalescence that this personal experience is related.

BUDD VAN SWERINGEN, M.D., Fort Wayne, Ind.

THE PRODUCTION OF SHOCK

To the Editor:—In THE JOURNAL, July 19, 1919, p. 178, Cannon makes the statement in a footnote that "Meltzer (*Penn. M. J.* **22**:129 [Dec.] 1918) has stated that I became 'converted to the theory that the most essential factor in the production of shock is acidosis.' I have never published the idea that there was in the acidosis of shock a primary cause for the low pressure." This is literally true. Cannon has nowhere stated in clear words that he is of the opinion that, in shock, acidosis is the primary cause for the low pressure. But one comes to such a conclusion from various statements which Cannon made in his article on "Acidosis in Cases of Shock, Hemorrhage and Gas Infection" (THE JOURNAL, Feb. 23, 1918, p. 531). On page 532 there is the statement: "From the evidence presented above, the conclusion is warranted . . . that as a general rule the lower the pressure the lower the [alkali] reserve. . . . Cases of blood pressure due to shock . . . have a diminished supply of alkali in the blood. As a general rule, the lower the pressure, the more marked the acidosis. . . . Shocked men . . . can be quickly relieved of their distress by intravenous injection of a solution of sodium bicarbonate." Page 615: "There is evidence that acid or change in the blood in the direction of acidity may have depressive effects on the blood pressure." Page 616: "As acid develops in tissues poorly supplied with oxygen, the blood vessels locally affected by these acids may reasonably be expected . . . to undergo relaxation." I was especially impressed by a statement of Bayliss (*J. Physiol.*, **52**, Proc. Physiol. Soc., xviii): "These recent experiments have led me to modify the point of view which experiments previously done in conjunction with Captain Cannon had inclined me to take. They compel me to look on acidosis and its treatment as of secondary importance." This statement implies that Bayliss entertained previously the view that acidosis is the primary cause of the low blood pressure in shock, a view which was formed on the basis of experiments which he carried out together with Cannon. It did not occur to me that two such authors as Bayliss and Cannon, working together, would entertain at the time of their work a different notion as to the primary cause of acidosis and both should nevertheless recommend the intravenous injection of sodium bicarbonate for the treatment of shock. My term that Cannon became *converted* was used because I believe that Wright was the first one to recommend the use of sodium bicarbonate.

I did not discuss the correctness of certain theories of shock. It was, as I stated, "an appeal to physiologists . . . to adhere firmly to the careful, critical methods which they are in the habit of employing in their physiologic researches, even if by doing so, as a consequence, the actual yield to medicine may be slow and, perhaps, even small." That appeal was, and still is, well founded.

S. J. MELTZER, M.D., New York.

[NOTE.—The letter of Dr. Meltzer was referred to Dr. Cannon, who replies:]

To the Editor:—From an investigator's statement of facts to draw a conclusion which he did not, then to attribute to him that conclusion, and finally to criticize him for drawing the conclusion seems to me not a good example of adhering to "careful, critical methods." I quite agree that Dr. Meltzer's appeal was, and still is, well founded.

W. B. CANNON, M.D., Boston.

TEETH FORMATION IN EPILEPSY

To the Editor:—I would like to ask through THE JOURNAL, if any physicians have observed a condition which I have found in the mouths of epileptics and also those mentally weak? Having had the privilege, for several years, of seeing the roentgenograms of the teeth of these individuals, I have found that in most cases the apexes of the teeth, if fully formed, were blunted to a marked degree, and in some there was only partial root development.

I make this inquiry, thinking that it may lead to further investigation by others better equipped.

GEORGE B. MCCLINTOCK, D.D.S., Cincinnati.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

TONSILS AS FOCI OF INFECTION

To the Editor:—Kindly advise me where I can get literature on diseased tonsils and their relation to other constitutional conditions.

AUSTIN M. GROVE, York, Pa.

ANSWER.—The following references may be consulted:

Hemolytic Streptococci and the Tonsils, editorial, THE JOURNAL, May 3, 1919, p. 1295.

Davis, J. L.: Diseased Faucial Tonsils, Their Toxic, Infectious and Reflex Effects, *Ann. Otol., Rhinol. & Laryngol.* **27**: 1265 (Dec.) 1918.

Nichols, T. J., and Bryan, J. H.: Tonsils as Foci of Infection in Streptococcus Hemolyticus Carriers, THE JOURNAL, Nov. 16, 1918, p. 1813.

Hammond, R.: Diseased Teeth and Tonsils as Causative Factors in Arthritis, *Am. J. M. Sc.* **156**: 541 (Oct.) 1918.

Moore, J.: Chronic Tonsil Infections, *J. Lab. & Clin. Med.* **3**: 283 (Feb.) 1918.

Harris, H. B.: Constitutional Conditions Resulting from Tonsil Infections, *Ohio State M. J.* **13**: 235 (April) 1917.

Crowe, J.; Watkins, S. S., and Rothholz, A. S.: Tonsil Infections and General Systemic Disorders, *Bull. Johns Hopkins Hosp.* **28**: 1 (Jan.) 1917.

Billings, Frank: Focal Infections, New York, D. Appleton & Co., 1917; Mouth Infection as a Source of Systemic Disease, THE JOURNAL, Dec. 5, 1914, p. 2024; Focal Infection: Its Broader Application in Etiology of General Disease, ibid., Sept. 12, 1914, p. 899; Chronic Focal Infection as a Causative Factor in Chronic Arthritis, ibid., Sept. 13, 1913, p. 819.

Rosenow, E. C.: Mouth Infection as a Source of Systemic Disease, THE JOURNAL, Dec. 5, 1914, p. 2026.

Mayo, C. H.: Mouth Infection as a Source of Systemic Disease, THE JOURNAL, Dec. 5, 1914, p. 2025.

Smith, A. J.; Middleton, W. S., and Barrett, M. T.: Tonsils as a Habitat of Oral Endamebas, THE JOURNAL, Nov. 14, 1914, p. 1746.

Wilson, N. L.: The Faucial Tonsils as a Gateway to General Infections, THE JOURNAL, Nov. 7, 1914, p. 1638.

Beck, J. C.: Chronic Focal Infection of Nose, Throat, Mouth and Ear, THE JOURNAL, Nov. 7, 1914, p. 1636.

Rosenow, E. C.: Etiology of Arthritis Deformans, THE JOURNAL, April 11, 1914, p. 1146.

Ingals, E. F.: What Relation, If Any, Have the Faucial Tonsils to Pulmonary Tuberculosis? THE JOURNAL, July 12, 1913, p. 113.

SKIN INK FOR OPERATIVE WORK

To the Editor:—Please publish a formula for a skin ink to be used in operative work, which will not be removed by water, alcohol, ether or benzin.

L. N., New York.

ANSWER.—N. S. Finzi (*Brit. M. J.* 1:52 [Jan. 12] 1918; abst. THE JOURNAL, Feb. 23, 1918, p. 573) uses a 5 per cent. pyrogallol and 2 per cent. iron solution, made as follows: pyrogallic acid, 1 gm.; denatured alcohol, 10 c.c.; solution of ferric chlorid, 2 c.c., and acetone, sufficient to make 20 c.c. This solution is kept in a bottle with a camel's hair brush attached to the cork. The mark on the skin is brownish gray at first, but after a few hours it turns a brilliant black.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ALASKA: Juneau, Sept. 2. Sec., Dr. L. P. Dawes, Juneau, Alaska.
HAWAII: Honolulu, Sept. 9-11. Sec., Dr. J. R. Judd, Honolulu, Hawaii.
ILLINOIS: Chicago, Sept. 22-25. Sec., Mr. Francis W. Shepardson, Capitol Bldg., Springfield.
IOWA: Des Moines, Sept. 16-18. Sec., Dr. Guilford H. Sumner.
MASSACHUSETTS: Boston, Sept. 9-11. Sec., Dr. Walter P. Bowers, State House, Boston, Mass.
NEW HAMPSHIRE: Concord, Sept. 11-12. Sec., Dr. Chas. Duncan, Concord, New Hampshire.
NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 16-19. Mr. Herbert J. Hamilton, Assistant, Professional Examinations, Albany.

Georgia March Examination

Dr. C. T. Nolan, secretary of the Georgia State Board of Medical Examiners, reports the written examination held at Atlanta, March 4-5, 1919. The examination covered 10 subjects and included 100 questions. An average of 80 per cent. was required to pass. Twenty-six candidates were examined, all of whom passed. Thirteen candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Emory University	(1919) 85.4, 86.2, 86.8, 87.4, 87.4, 87.5, 87.9, 88.1, 88.2, 88.3, 88.3, 88.5, 89.2, 89.2, 89.5, 89.5, 89.8, 90.3, 90.8, 91.1, 91.5, 91.6, 91.8, 92.1, 92.7.		
Columbia University		(1918)	95.4

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Medical College of Alabama		(1885)	Mississippi
Georgia College of Eclec. Med. and Surg.		(1914)	Missouri
University of Louisville		(1909), (1913)	Kentucky
Baltimore Medical College		(1895)	New Jersey
University of Maryland		(1915)	Maryland
University of Pennsylvania		(1892)	Texas
Meharry Medical College		(1917), Missouri; (1918, 3)	Tennessee
University of Nashville		(1908)	Alabama
Vanderbilt University		(1917)	Tennessee

Indiana February Examination

Dr. William T. Gott, secretary of the Indiana State Board of Medical Registration and Examination, reports the written examination held at Indianapolis, Feb. 26-28, 1919. The examination covered 16 subjects and included 100 questions. An average of 75 per cent. was required to pass. Thirty-seven candidates, including three osteopaths, were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Indiana University	(1919) 85.3, 86.7, 87.4, 87.7, 88.3, 88.5, 88.6, 88.7, 89.2, 89.3, 89.6, 89.6, 89.7, 89.9, 90, 90.1, 90.1, 90.6, 90.6, 90.9, 91, 91.4, 91.7, 91.7, 91.7, 92, 92.1, 92.3.		
Johns Hopkins University		(1916)	86.9, 91.8
Harvard University		(1918)	87.1
Dartmouth Medical School		(1904)	84.5
Meharry Medical College		(1914)	80.3
National University, Athens		(1884)	77.1

Dr. Gott also reports that 26 candidates, including 2 osteopaths, were licensed through reciprocity, from Aug. 1, 1918, to April 17, 1919. The following colleges were represented:

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Chicago College of Medicine and Surgery		(1913), (1914)	Illinois
Illinois Medical College		(1908)	Illinois
Loyola University		(1917)	Illinois
Rush Medical College		(1887)	Illinois
Indiana University		(1909)	Texas
Hospital College of Medicine, Louisville		(1906)	Kentucky
Louisville National Medical College		(1910)	Tennessee
University of Louisville (1875) Illinois, (1916) Kentucky.			Wisconsin, (1917)
University of Michigan Homeopathic School		(1908)	Michigan
Eclectic Medical Institute		(1909)	Ohio
Medical College of Ohio		(1886)	Ohio
Pulte Medical College		(1880)	Illinois
University of Oklahoma		(1912)	Oklahoma
Jefferson Medical College		(1909)	Ohio
Meharry Medical College	(1906) Kansas,	(1915)	Georgia
University of Nashville		(1888)	*Mississippi
Vanderbilt University		(1893)	Kentucky
National University, Athens		(1895)	Illinois

* There is no record of this candidate's ever having a Mississippi license.

Iowa March Examination

Mr. Guilford H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Iowa City, March 24-26, 1919. The examination covered 8 subjects and included 100 questions. An average of 75 per cent. was required to pass. Fifty candidates were examined, all of whom passed. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1917)	89.8
Rush Medical College		(1917)	90.1, 93.5
University of Illinois		(1919)	94, 90.5
State University of Iowa College of Medicine (1919)	81.8, 85.2, 85.2, 86.7, 87.1, 87.3, 87.5, 87.6, 88.1, 88.2, 89, 89.1, 89.3, 89.5, 89.5, 89.5, 89.8, 90.1, 90.1, 90.2, 90.5, 90.5, 90.7, 90.7, 90.8, 91.1, 91.3, 91.3, 91.5, 91.6, 91.6, 91.8, 91.8, 91.8, 92.1, 92.5, 92.6, 92.6, 93.2, 93.7, 93.8, 93.8, 94.8.		
University and Bellevue Hospital Medical College		(1903)	83.5
University of Pennsylvania		(1917)	88.6

The following candidates were licensed through reciprocity, April 29, 1919:

College	Year Grad.	Reciprocity with
American College of Medicine and Surgery	(1905)	Illinois
Chicago College of Medicine and Surgery	(1910)	Illinois
Illinois Medical College	(1908)	Illinois
Rush Med. Coll. (1888) Missouri, (1915) Illinois, (1916, 2)		Illinois
University of Kansas	(1913)	Kansas
Johns Hopkins University	(1905)	Illinois
Tufts College Medical School	(1912)	Maine
St. Louis Medical College	(1880)	Missouri
St. Louis University School of Medicine (1917) Missouri.	Missouri,	(1915)
Univer. Med. Coll. of Kansas City (1892) Nebraska,	(1910)	Kansas
John A. Creighton Med. College	(1901), (1916), (1913)	Nebraska
University of Nebraska	(1916)	Nebraska
Eclectic Medical College, Cincinnati	(1916)	Nebraska
Ohio Medical University, Cincinnati	(1902)	N. Dakota

Oklahoma April Examination

Dr. J. J. Williams, secretary of the Oklahoma State Board of Medical Examiners, reports the written examination held at Oklahoma City, April 8-9, 1919. The examination covered 11 subjects and included 110 questions. An average of 60 per cent. was required to pass. Five candidates, including 1 osteopath, were examined and passed. Twenty-six candidates, including 3 osteopaths, were licensed through reciprocity, and 12 candidates were granted reregistration licenses. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Bennett Medical College		(1910)	78
Chicago College of Medicine and Surgery		(1917)	70
University of Illinois		(1919)	87
Boston University		(1919)	86

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Little Rock		(1910)	Arkansas
Southern College of Medicine and Surgery		(1913)	Georgia
Bennett Medical College		(1910)	Indiana
Rush Medical College	(1906) Missouri;	(1914)	Missouri
Keokuk Medical College		(1896)	Kansas
State University of Iowa College of Medicine		(1912)	Iowa
Louisville Medical College		(1889)	Texas
University of Louisville	(1901) Kansas;	(1915)	Kentucky
University of Michigan Medical School		(1906)	Michigan
Barnes Medical College		(1900)	Texas
Medico-Chirurgical College of Kansas City		(1904)	Kansas
St. Louis College of Physicians and Surgeons		(1910)	Iowa
St. Louis University		(1916), (1917)	Missouri
Lincoln Memorial University		(1909)	Tennessee
Meharry Medical College	(1917) Tennessee;	(1918)	Georgia
Memphis Hospital Medical College		(1903)	Arkansas
Tennessee Medical College		(1901)	Kentucky
University of the South		(1898)	Texas
Vanderbilt University		(1880)	Tennessee

Book Notices

TRAITEMENT DES PSYCHONÉVROSES DE GUERRE. Par G. Roussy, Agrégé à la Faculté de Paris, J. Boisseau, Ancien Interne des Hôpitaux, et M. d'Œlsnitz, Ancien Interne des Hôpitaux. Paper. Price, 4 francs. Pp. 191, with illustrations. Paris: Masson et Cie, 1918.

This small volume is really a sequence to "Psychonevroses de Guerre" by Roussy and Lhermitte, in which the general principles of treatment were considered. In the meantime, Roussy, Boisseau and D'Œlsnitz, having had exceptional opportunities for the study and treatment of war neuroses, have accumulated a number of conceptions and convictions concerning these disorders. Their ideas are embraced in the present work. The authors very pertinently remark that the analytic study of therapeutic results, especially of the mode of disappearance of a nervous disorder, naturally helps one to understand the mechanism of inception and the evolution of such disorder.

As most French authors are fairly well agreed as to the ordinary types of neuroses, their nature and treatment, the authors of the present volume have devoted especial study to the type of trouble specially emphasized by Babinski and Froment, called by them "physiopathic" or of "reflex nature." Babinski and Froment maintain that these cases are not purely functional and that they cannot be shown to be organic in the ordinary acceptance of the term. With the conclusions of Babinski and Froment the authors of this work take positive issue. They believe that such cases are essentially psychopathic or psychogenic, and that such circulatory and trophic abnormalities as may be present are purely secondary. For instance, in an old case of hysterical paralysis with contracture, there is the paralysis and contracture which can be rapidly removed by appropriate psychotherapy and which disappeared during general anesthesia. But there have been in the course of time added to the functional disorder changes in the joint similar to those found after fracture when the extremity has been too long immobilized. These changes, of course, do not disappear under general anesthesia and are only gradually removed by physiotherapy.

In Chapter I there are brief descriptions of the multitudinous types of disability, types which sometimes depend on the particular anatomy and physiology of the joint involved. Chapter II is devoted to the steps of birth and fixation of a neurosis, without any profound psychologic analysis, and Chapter III to practical prophylaxis in the army.

With Chapter IV we reach the details of treatment. The authors divide their procedure into: (1) preparation; (2) relief from the motor trouble ("unhooking," detachment, uncoupling); (3) fixation (of the result obtained), and (4) training, medical and military. Of these they think the first perhaps the most important. The object is to procure the proper mental attitude. This is begun by an intelligent and detailed examination. Then the patient is informed that he is curable and is going to be cured. Next he is placed in bed under proper influences. These embrace encouraging, explanatory and sympathetic but authoritative talks by a competent physician; talks with and letters from comrades who have been cured; stories by the nurses of brilliant successes; the placing of a patient with an inveterate case in a ward of men convalescent from similar trouble, etc. Not until the patient has reached "phychic maturity" is the next step taken. And the authors insist that the physician must also be ready—in good form; for the next move involves a mental contest between patient and physician from which the latter must emerge victor. Occasionally, if the preparation has been imperfect, the struggle may last two or three or four hours; but the physician is not to desist until his result is attained. Details of the physician's armamentorium and technic must be read in the original. Steps 3 and 4 follow the general lines recognized by all neurologists. This chapter is illuminated by a citation of striking cases and by convincing photographs. It seems incredible that paralysis and contracture of the hand with "boxing glove" edema, all of thirty-three months' duration, could disappear in eighteen hours. But such is one illustrative case.

Chapter V contains detailed consideration of the various conditions grouped by Babinski under the term "physiopathic." The authors are not able to clarify all of them; but for the vast majority their explanations seem to be quite adequate. This chapter gives the results of very important investigations. A short chapter on prognosis and an excellent bibliography terminate the volume. No neurologist can afford to be without it, and every one attempting to treat functional nervous disorders should read it. We believe there is now an English translation.

THE SOLDIER'S HEART AND THE EFFORT SYNDROME. By Thomas Lewis, M.D., F.R.C.P., F.R.S., Physician of the Staff of the Medical Research Committee. Cloth. Price, $2.25 net. Pp. 144 New York: Paul B. Hoeber, 1919.

The views of Thomas Lewis concerning the "effort syndrome" are well known, especially through the report of the Medical Research Committee and the frequent references to it and quotations from it in current medical literature. It is well, however, to have these views, matured by added experience and authoritatively revised, in convenient and compact form, as in this attractive little volume. The "effort syndrome" is here fully considered as to nature, symptoms, prognosis and treatment. There are also discussed other cardiac disorders of soldiers. One notes with hearty approval the emphatic protest against assigning too much importance to the cardiac murmur. At the same time we feel that there is a real danger that Lewis, as well as Mackenzie, has made such extreme statements about the insignificant value of the systolic murmur from the standpoint of both diagnosis and prognosis that through his powerful influence the profession at large will come to believe that all endocardial murmurs are practically negligible. Such a belief, if the basis of practice, would be decidedly harmful. While much that is contained in the book is of purely military application, there is a great deal that will bear transfer to civil practice. The volume will be found useful, therefore, not only in the army but also by the physician in private or hospital practice. The style is the orderly, lucid style that we have come to associate with the name of Thomas Lewis, though it does not, as it seems to us, come up to the standard of his other writings. Perhaps more deliberate revision, with pruning, will remove some evidences of haste. Certainly some of the loosely constructed sentences of the preface ought not to be allowed to stand in their present form.

WAR, SCIENCE AND CIVILIZATION. By William Emerson Ritter, Director of the Scripps Institution for Biological Research of the University of California. Cloth. Price, $1.25 net. Pp. 125. Boston: Richard G. Badger, 1919.

This book, written in 1915, reflects the views of a certain number of college and university teachers in the early years of the war. Two statements on the first page would probably not be made today, even by a biologic student of warfare. "It is incumbent on the people of our country to give more heed to one of Germany's claims than so far we have given. We must grant that she deserves 'more room in the sunshine' than she has." The verdict of the civilized world today is that Germany has forfeited any claims she might have had to a "room in the sunshine" and that she deserves principally a protracted period of repentance and restitution. The other statement is: "We gladly recognize that the good Germany has done mankind generally by cultivating the sciences and arts of peace outweighs the harm she has done in promoting war." Few will agree with Professor Ritter in this statement. Even if the author believed it at the time he wrote it, Germany has a long debit account on her balance sheet, and it has grown beyond belief in the last four years. Another view advanced by the author is the voluntary surrender of Hawaii to Japan on the ground that Japan needs land and that we have more than we need. By the same reasoning, we should have given away everything west of Pittsburgh after the Revolutionary War. The aim of the writer is to illuminate civilization and international relations by the pure white light of biologic science. The first problem, he says, is to find the way "whereby the nations of the world, some of which truly need a larger share of Nature's wealth than they possess, while others possess more

than they really need, may adjust their relative needs without resorting to war." He asks, "Is an international arrangement possible whereby a nation might under certain circumstances give over to other nations portions of its territory or other economic advantages peacefully, deliberately, and without immediate and definite compensation?" His own answer is "No, as long as politics, national and international, rest on a philosophy of nature and human nature as defective as that upon which they now do rest; but yes, if political practice could be based on a philosophy that should conform to the actual facts of nature and human nature." Most readers will, we think, disagree fundamentally with this statement. Political practice is today based on the actual facts of nature and human nature rather than on idealistic and abnormal unselfishness. Nations as well as individuals are subject to the struggle for existence and survival of the fittest, and must feed their own children before they give to others. Professor Ritter's views were hardly timely in 1915, and they are still less so at present.

PERSONAL IDENTIFICATION: METHODS FOR THE IDENTIFICATION OF INDIVIDUALS, LIVING OR DEAD. By Harris Hawthorne Wilder, Ph.D., Professor of Zoology in Smith College and Bert Wentworth. Cloth. Price, $5 net. Pp. 374, with illustrations. Boston: Richard G. Badger, 1918.

Since human beings are not registered regularly by the government—in many places not even at the time of their birth—it is not infrequent for a human being to become lost from his community and, through lack of any means of identification, to disappear as if—in the words of the "Hun"—he had been "sunk without a trace." For many years the chief interest attached to personal identification lay in its relationship to the proving of guilt of those who had violated the law. It has frequently been necessary, however—and is daily becoming more so—to prove identification in connection with such legal problems as inheritance, when death occurs by burning, drowning, or other mutilating causes. In this book the authors consider identification as it is made by all of the various methods thus far known. The work is divided into two parts, describing, first, methods which furnish partial identification, including the more common marks, such as general configuration, moles, scars, habits and voice, and, second, methods which furnish absolute identification, including finger prints, palm prints and foot prints. The book is illustrated throughout by interesting cases and instructive pictures, including legal controversies in which personal identification figured prominently. To all physicians interested in medicolegal subjects this book will appeal particularly.

MILITARY SURGERY OF THE EAR, NOSE AND THROAT. By Hanau W. Loeb, M.D., Major, Medical Reserve Corps, U. S. A. Medical War Manual No. 8. Authorized by the Secretary of War and under the Supervision of the Surgeon-General and the Council of National Defense. Leather. Price, $1.25. Pp. 176. Philadelphia: Lea & Febiger, 1918.

In this booklet the author reviews the surgical literature of the present war on the subjects included in the title. The book was prepared primarily for the use of commissioned otolaryngologists; and, as these are presumed to have had elementary training, it makes no presentation of elementary principles. The author presents references to more than 500 bibliographic articles from recent British, German, Italian, French and American literature.

PROBLEMS OF FERTILIZATION. By Frank Rattray Lillie, Professor of Embryology, University of Chicago. Cloth. Price, $1.75 net. Pp. 278, with illustrations. Chicago: The University of Chicago Press, 1919.

Since the two primary impulses of all life are self preservation and race preservation, man has always been interested in the method of reproducing his kind and in the various physiologic and pathologic factors that are involved. After an enlightening history of early studies on this subject, Dr. Lillie presents briefly the morphology of fertilization, the physiology of the sperm cell and all the processes of fertilization, the problem of specificity in fertilization and the problem of activation. The theory of Dr. Lillie has been that the spermatozoon undergoes some activation necessary for its part in the internal events of fertilization: in other words, that the spermatozoon itself needs to be fertilized and that this takes place on its passage through the cortex of the ovum. In presenting other theories of activation, the author points out the plausibility of this particular view. To those already well grounded in elementary embryology, this book will form an enlightening second step.

Medicolegal

Valid Law—Meaning of Word "Medicine"—Neuropathy

(Commonwealth v. Seibert (Pa.), 105 Atl. R. 507)

The Supreme Court of Pennsylvania, in affirming a judgment that affirmed a conviction of the defendant, a neuropath, of practicing medicine without a certificate of licensure, holds constitutional the statute of that state which makes it unlawful for any person to engage in the practice of medicine and surgery, or to hold himself forth as a practitioner in medicine and surgery, or to assume the title of doctor of medicine and surgery, or doctor of any specific disease, or to diagnose diseases, or to treat diseases by the use of medicines and surgery, or to sign any death certificate, or to hold himself forth as able to do so, unless he has first fulfilled the requirements of this act and has received a certificate of licensure from the bureau of medical education and licensure and has had such license duly recorded.

The court says that the determination of the several inquiries raised must depend on the proper understanding to be derived from the words of the statute involved. Of controlling importance in this connection is the word "medicine," a word susceptible of distinct meanings; one indicating nothing more than a remedial agent that has the property of curing or mitigating diseases, or is used for that purpose, while the other indicates an art of healing or science which has for its province the treatment of diseases generally. The latter has much the wider and more comprehensive significance, of course, and while, as so used, it may be in a sense technical, yet unquestionably the wider is the popular sense in which it is employed and understood. Furthermore, whatever is technical in it has been so far popularized by common usage and understanding that no one, however unlearned, can fail to observe the true distinction between medicine as a drug and medicine as a science or profession. It is in the latter sense that the word is employed in the statute.

The one danger provided against was, not the promiscuous sale of drugs or other remedial agents, but the unrestricted and unregulated practice of medicine or the art of healing; medicine here being used to denote an art or science having for its object the cure of diseases and the preservation of health, whether with aid of drugs or any remedial agencies whatever. The manifest and only purpose of the statute was to confine the right to invite public confidence in the skill and efficiency of those who would hold themselves out to the public as medical doctors, to those only who have had an examination by an impartial board of examiners created by the statute and acting for the state, and have been accredited by the board as having met the requirements of the law and received its license.

Giving the act this interpretation, the defendant by his conduct brought himself unquestionably within its terms; he engaged in the practice of medicine, that is, he held himself out to the public as one instructed and skilled in the healing art. By printed sign exposed in front of the office, styling himself as Dr. J. A. Seibert, Neuropath, he represented himself as skilled in the healing art, and invited the confidence and patronage of the sick and afflicted generally. The distinction that was sought to be made between neuropathy and medicine could avail the defendant nothing if it be kept in mind that the legislative meaning of the latter word, when used in the expression "practice of medicine," covers and embraces everything that by common understanding is included in the term healing art. The defendant held himself out to the public and invited its confidence and patronage as

a "practitioner of neuropathy." The use of this term necessarily implied that he was skilled in the science of pathology, a science which unquestionably has for its province "the treatment of diseases, their nature, causes, progress, manifestations and results." This to the lay mind, no less than the professional, would import that neuropathy was a branch of medicine. What more could be said of allopathy, homeopathy or any other science of healing with such termination as its adopted designation?

Quarantine and Habeas Corpus

(Ex parte Hardcastle (Texas), 208 S. W. R. 531)

The Court of Criminal Appeals of Texas, in ordering that a writ of habeas corpus be granted, says that the relator was held under an order of the city health officer of San Antonio, by virtue of quarantine regulations established in accord with Chapter 85 of the acts of the fourth called session of the thirty-fifth legislature, under a statement of the order of arrest that, according to the information of the health officer, the relator was affected with gonorrhea. It was agreed that the sole issue in the case was whether or not the decision of the proper health is final or whether it can be inquired into by writ of habeas corpus.

The legislature, under the police power, has authority to authorize the establishment of quarantine regulations for the protection of the public against contagion from those persons whose condition is such as to spread disease, and, incident thereto, to authorize the arrest and detention of such persons; and such, the court understands, is the purpose of the statute in question. Under its terms, the proper health officer may issue a warrant by virtue of which a lawful arrest may be made without preliminary thereto affording the person affected a hearing; but if, after arrest, such person challenges the right of the authorities to continue the detention, the fundamental law accords him the right to have the legality of his detention inquired into by a proper court in a habeas corpus proceeding. The law denies to no one restrained of his liberty without a hearing the right to prove in some tribunal that the facts justifying his restraint do not exist. The health authorities causing the arrest of the relator derived their power to do so from the alleged existence of the fact that the relator was affected with the disease mentioned, and that her detention was required in the public interest to prevent contagion. If those facts did not exist, the officer had no jurisdiction to continue the restraint, and the court in the habeas corpus proceeding has authority to inquire whether the facts essential to jurisdiction exist.

The decision of the Supreme Court of Washington (*State v. Superior Court for King County*, 174 Pac. R. 973), to which this court was referred as illustrating an exception to this rule, does not, this court thinks, extend so far as to support the contention that the decision of the health officer who ordered the arrest of the relator was conclusive against her right to an inquiry in a habeas corpus hearing touching the existence of the facts on which such officer acted. The Washington decision construed a statute passed under a special provision of the constitution of that state, authorizing the "establishment of boards of health with such powers as the legislature may direct." The statute enacted under this power did not make the initial order of arrest conclusive, but established the board of health as a forum of appeal, and specially provided that its decision reviewing that of the health officer should be final.

The Texas constitution, unlike that of the state of Washington, contains no special provision on the subject; but the power to establish quarantine, as existent under the Texas constitution, is an incident of the police power vested in the legislature under the general power to pass laws. The Texas statute does not declare that the initial order of arrest shall be conclusive; nor does it designate any tribunal to which one detained under an order of arrest issued by the health officer may appeal for a hearing. The fair and reasonable interpretation of the statute under which the relator was held is that which accords the health officer the power to order arrest and detention, leaving to the person detained the right to invoke the decision of the established judicial tribunals of the state on questions raised, either of fact or of law, involving the validity of the detention. Wherefore the court concludes that, under the act of the legislature in question, the relator had the right to a hearing on writ of habeas corpus, and therein to prove the nonexistence of the facts necessary to authorize her continued detention and thereby obtain release.

State Board of Health Requiring Vaccination

(Rhea v. Board of Education of Devils Lake Special School District (N. D.), 171 N. W. R. 103)

The Supreme Court of North Dakota, in reversing a judgment that was rendered in favor of the defendant in this mandamus case growing out of the exclusion from the public schools maintained by the defendant of the plaintiff because he had not been vaccinated, says that, while the researches of counsel and the investigations of the court had failed to disclose the existence of any direct authority on the exact question presented under the facts in this case, it appears that there are ample precedents for the principles which the court deems controlling. Boards of health and boards of education possess only such powers as the statutes confer on them. The power to legislate cannot be delegated to them; but when the legislative policy is determined by the competent legislative authority, ample administrative powers may be vested in executives or boards to the end that the legislative rule may be properly enforced.

It was alleged that the defendant board of education, claiming to act under and pursuant to an order of the state board of health, made an unlawful order requiring that all pupils should be vaccinated before being admitted to the public schools of the district; and it was contended on behalf of the defendant that, since Section 425 of the Compiled Laws of North Dakota of 1913 requires the vaccination of minors generally, it was proper for the state board of health to promulgate an order which would not affect adversely any one who had complied with the statute. However, the failure to comply with the compulsory vaccination statute results in making the one who thus fails guilty of a misdemeanor, and subjects him to the prescribed punishment. It is not particularly the function of the board of health to compel compliance with this statute. The board is not the public prosecutor. Even the public prosecutor could not compel vaccination. He can only punish for violations of the statutes, and to exclude one from school on the same ground would be to add a penalty not included in the statute. The powers of the board of health are limited to such needful rules and regulations as may be required for the prevention and spread of contagious and infectious diseases, and the fact that the legislature has purported to make vaccination compulsory does not add to or subtract from the scientific data on which the board of health may determine whether or not a proposed rule or regulation is "needful." The authorities uniformly hold that a board of health, constituted as that of North Dakota is, possessing requisite general powers for the prevention and spread of contagious diseases, cannot promulgate and enforce rules which merely have a tendency in that direction, but which are not founded on any existing condition, or on a danger not reasonably to be apprehended.

Section 400 of the Compiled Laws of 1913, making it the duty of the board of health to make and enforce all needful rules and regulations for the prevention and cure of contagious and infectious diseases, is held not to authorize the board of health to issue an order denying to children the right to attend the public schools except on the condition of being vaccinated, when it appears that there is no prevailing epidemic of smallpox, and no imminent danger from this disease is reasonably to be anticipated.

Sections 1346 and 426 of the Compiled Laws of 1913, defining the duties of school officers with reference to the supervision of the health of schoolchildren and their exclusion from schools when infected with infectious or contagious diseases, the court construes and holds not to authorize the exclusion for nonvaccination, in the absence of a showing of danger due to the existence of smallpox in the community, or that such danger is reasonably imminent.

Society Proceedings

COMING MEETINGS

American Assn. of Electro-Therap. & Radiol., Philadelphia, Sept. 9-12.
Am. Assn. of Obstetricians and Gynecologists, Cincinnati, Sept. 15-17.
American Roentgen Ray Society, Saratoga Springs, Sept. 3-6.
Indiana State Medical Assn., Indianapolis, Sept. 24-26.
Medical Society of the Missouri Valley, Des Moines, Sept. 18-19.
Pennsylvania State Medical Society, Harrisburg, Sept. 22-25.
Tri-State District Medical Society, Rockford, Ill., Sept. 1-4.
Utah State Medical Association, Salt Lake City, Sept. 9-10.
Washington State Medical Association, Spokane, Sept. 11-13.
Wyoming State Medical Society, Thermopolis, Sept. 10-11.

AMERICAN ASSOCIATION OF ANESTHETISTS

Seventh Annual meeting, held at Atlantic City, N. J., June 9-10, 1919

(Concluded from page 361)

SYMPOSIUM ON ANESTHESIA FOR WAR SURGERY

A Plea for Chloroform

Dr. William B. Howell, Montreal: Whether from climatic conditions or a difference in the quality of the ether supplied, or possibly owing to the special type of patient, many of whom were given to excessive cigaret smoking, ether alone was not as satisfactory an anesthetic as in civilian surgery, and many anesthetists were glad to turn to the free use of chloroform. The majority of soldiers coming to operation were wounded only slightly, and apart from their wounds, were in excellent physical condition. They were highly resistant to ether and inclined to shout and struggle during induction. While induction could be facilitated by the preliminary use of nitrous oxid-oxygen or ethyl chlorid, when available, their lack plainly indicated the efficiency of chloroform in getting large numbers of wounded rapidly ready for the surgeons. Chloroform, in war surgery, should be used only by those experienced in its administration, and then preferably by means of a dosimetric apparatus like that of Vernon Harcourt. Depth of anesthesia and significance of danger symptoms cannot be gaged accurately when chloroform is given on the open mask. A dosimetric inhaler enables the anesthetist to know what he is doing and to escape the dangers incident to fibrillation during induction from too light anesthesia. While atropin is not necessary before chloroform anesthesia, morphin may be used, if given in moderation. Oxygen and warmth give chloroform additional safety. When the respiratory system is embarrassed by incipient tuberculosis, emphysema, coryza, bronchitis or empyema, chloroform may be used with considerably more satisfaction than other anesthetics and with better results. Chronic bronchitis, or "Flanders cough," was very prevalent in the Ypres district and accounted to some extent for the popularity of chloroform. In strong, muscular soldiers, chloroform is especially adapted for the reduction of dislocations and the setting of fractures.

Effects of Ether and Nitrous Oxid-Oxygen Anesthesia in Cases of Shock and Hemorrhage

Dr. W. B. Cannon, Boston: The sensitiveness of shocked and exsanguinated soldiers to anesthesia is a very interesting as well as important point in war surgery. If you talk to a surgeon about operating on a shock patient he will tell you he does not wish to touch the man on account of the danger involved. His hesitancy is due to the fact that the blood pressure falls to a perilous extent during the surgical procedure. In a series of cases we studied we found that the blood pressure fell during operation from 88 systolic down to 62, and from 62 diastolic down to 31, a calamitous drop when one considers that the pressure was already so low as to be barely enough to keep the tissues properly supplied with oxygen. Accompanying this fall was a marked drop in the carbon dioxid content of the plasma. It was found in the laboratory that these imperiling symptoms during operation were largely due to anesthesia. Animals were used experimentally to test out the effects of several anesthetics on shocked conditions. Under ether there was an invariable and marked fall in blood pressure. Under nitrous oxid-oxygen anesthesia the effect depended on the relative amounts of gases in the mixture. In a ratio of 6:1 the effect of nitrous oxid-oxygen was almost that of ether. Ratios of 5:1 and 4:1 also precipitate falls in blood pressure. However, with a ratio of 3:1 the effect on blood pressure becomes negligible. There is no doubt that nitrous oxid-oxygen is the anesthetic of choice in shock and hemorrhage, especially when given with the greatest possible admixture of oxygen. If morphin is previously administered, the amount of nitrous oxid in proportion to oxygen can be reduced greatly. Furthermore, many shocked soldiers are so dulled that they can be operated on in analgesia, and surgical anesthesia is not necessary. Under ether anesthesia there is a means of sustaining blood pressure, and that is to start transfusion or infusion at the beginning of the operation and let it continue gradually while the operation is going on. Pressure is thus held up to a proper level, the blood stream is kept going with no reduction in its rapidity, and the shocked soldier gets through the operation in much better shape than would otherwise be possible.

Experiences with Anesthesia in Thoracic Surgery in the War Zone

Dr. Howard Lilienthal, New York: The principles observed in arranging an apparatus were to provide a flow of air, preferably from a foot bellows, to pass through an ether container, in varying quantity and to be carried to the patient's pharynx by means of nasal tubes. Provided precautions were taken to avoid pumping liquid ether into the patient's throat or allowing the ether in the container to become too cold from excessive air pumping, little difficulty was experienced with the apparatus, once those trained had caught the knack of administration. Of course patients had to be anesthetized to the surgical plane before making the shift to the endopharyngeal technic. After this shift it was only necessary for the anesthetist to carry as smooth and light an anesthesia as was consistent with the surgical procedure to meet the surgeon's demands. The endopharyngeal method of etherization worked well for all plastic operations about the head, face and neck and for extrathoracic work on the chest. At first it was doubted that it would suffice for intrathoracic surgery; but it was soon found that the amount of pressure that could be maintained within the pharynx with endopharyngeal anesthesia was quite sufficient to keep the lungs in any state of inflation desired and yet not to interfere with pulmonary movement. If anything, this method proved more flexible than endotracheal anesthesia and more practically serviceable.

Ether Analgesia by Inhalation for Minor Operations, Especially in War Surgery

Dr. Frances Haines, Chicago: This method was developed in U. S. Base Hospital No. 13 in France as a result of the very frequent need of producing analgesia or very light anesthesia for certain operative procedures. Nitrous oxid being unobtainable in this hospital center, and local anesthesia being unsuitable for handling many types of wounds, this method of ether analgesia resulted from the spur of necessity. Our surgeons called for a method safer than ether by mouth or ethyl chlorid mixtures and for an analgesia often lasting more than three minutes. Thorough preparation of the patient, both physical and psychic, is more important to the success of the analgesia than to the safety of the patient. Mild catharsis and restriction of food and liquids should be the same as before general anesthesia. A hypodermic of morphin and atropin, one hour before operation, aids materially in calming the patient's mind. The patient's confidence should be gained. A Schimmelbusch mask covered with two layers of fine wool stockinette is the preferable apparatus. A towel or gauze roll is in readiness for wrapping around the edge of the mask. The patient's eyes are protected with wet cotton. The mask is saturated with ether as in using the so-called "ether-rausch" and more or less rapidly approached to the patient's face, and after two minutes is surrounded by the towel. The patient is usually in an analgesic stage in four minutes, with or without complete loss of consciousness, but without excitement. Ether is administered continuously

to within a few seconds of the termination of the operation. Within a minute, as a rule, even though analgesia is continued for from five to ten minutes or longer, the patient will be awake and in possession of his faculties. Theoretically, this analgesic stage seems difficult and almost impossible to maintain; but in practice it worked out successfully in 95 per cent. of the cases in which it was attempted. The only contraindication to its use is in partially united fracture, which might be broken should the patient resist during the opening of a sinus or insertion of a drain.

Experiences of an Anesthetist at the Front

DR. W. S. SYKES, Cleveland: Ether was used most extensively on account of its convenience and comparative safety and its not entailing cumbersome apparatus. The Scotch surgeons in the British service clung to chloroform, and their results were excellent. Ethyl chlorid was used to a considerable extent in the British service, particularly for minor operations. Ether-oxygen was a favorite method at the front in serious cases, the oxygen from a low pressure tank being sent through a Shipway apparatus to provide a warmed ether vapor. Owing to the scanty supply of nitrous oxid it had to be reserved for most desperate cases, in which it certainly proved a life saver. Toward the close of hostilities when compact, portable American gas-oxygen devices and cylinders of compressed gasses became available, the nitrous oxid-oxygen technic, as demonstrated by American anesthetists at the front, won the favor of surgeons of all the allied armies. It gave promise, also, of obviating to a great extent postoperative pneumonia. While many penetrating wounds of the chest were operated on under local anesthesia or nitrous oxid-oxygen at the base hospitals, nearer the front we used the warmed ether vapor, occasionally modified with the admixture of chloroform. Ether vapor was found quite superior to the drop method in every respect. It also saved the surgical team from working in an ether-laden atmosphere, something very much appreciated when shifts continued for from twelve to fourteen hours. Morphin was withheld from those in severe conditions of shock, as it lowered their resistance in a marked degree. Even one-fourth grain of morphin may invite disaster in the presence of shock or hemorrhage. Chloroform was, of course, contraindicated in shock. Ether depression was dreaded after operations in the same circumstances, and nitrous oxid-oxygen proved the anesthetic of choice in this condition. It was found very dangerous to alter the position of patients on the table after anesthesia had continued for more than half an hour. Consequently, in cases of multiple wounds, the minor ones received first attention and then the patient was placed in a posture which would demand no further change. The wounded, fresh from the front, were subconsciously exalted and prone to excitement during induction. This exaltation disappeared rapidly and was observed infrequently at the base and not at all on the return to home hospitals. Five c.c. of chloroform as a single dose proved to be an invaluable method for transient anesthesia or analgesia for minor procedures. While spinal anesthesia was used to some extent in base hospitals, it was found to be especially dangerous in all patients showing a reduction below normal of the hemoglobin index. Consequently its utility was limited.

Ether Administration in the Upright Posture

DR. FRANK DYER SANGER, Baltimore: Complications under etherization are distinctly respiratory in character. Hence it would seem logical to operate on patients under ether anesthesia in the same posture in which conscious patients seek relief from respiratory embarrassments, such as cyanosis, dyspnea and apnea. The same proposition held true for patients with broken compensation, despite the time-honored theory of cerebral anemia. Even for artificial respiration the upright posture has all the anatomic and physiologic advantages, since in it all the muscles assisting in the respiratory act have their proper play. The position offers many advantages from the operator's standpoint. The exposure in nose and throat work is good, illumination is easy, and hemorrhage and oozing are less troublesome than in the recumbent posture. Less assistance is required. Ether administered by any method in this posture is easy; not infrequently the anesthetist can act as surgical assistant as well. I have never had an ether death or serious ether emergency in twenty-two years, during which I have employed the upright posture constantly.

Spinal Anesthesia

DR. W. G. HEPBURN, Montreal: At the Montreal General Hospital we use the following solution for spinal anesthesia: stovain 5 gm., and commercial glucose 5 gm., dissolved in 95 c.c. of physiologic sodium chlorid solution. This solution has a specific gravity of 1.031 and a neutral reaction, and is kept in sealed glass ampules of 2 c.c. capacity. The dosage is regulated in accordance with the weight, age and vitality of the patient. The maximum dosage is 0.07 gm. of stovain or 1.4 c.c. of solution, and the minimum 0.01 gm. The injection is made in the third lumbar interspace under rigid aseptic precautions, after 1 or 2 drams of spinal fluid have escaped. The saline menstruum of the solution tends to neutralize the osmotic factor, and the glucose exerts a cohesive action to counterbalance the diffusible tendency, so that the high specific gravity will carry the solution to the lowest dependent portion of the cord. Consequently, the sitting posture, and a semiupright posture during injection and operation, are used for sacral anesthesia. The lateral posture with hips and head elevated is used for low abdominal operations. For operations below the level of the umbilicus, analgesia is checked when the xyphoid is reached by quickly lowering the hips to the level of the table. For upper abdominal operations the analgesia is allowed to ascend to the level of the fourth intercostal space. By continuing the elevation of the head and shoulders during operation and for six hours after shock, faintness, respiratory distress and depression symptoms may be obviated entirely. Spinal anesthesia is used most advantageously in diabetics, or for patients suffering from advanced cardiac, pulmonary or renal insufficiency. It eliminates the dangers of postoperative acidosis. Operative analgesia persists for a period varying from forty-five minutes to two hours. Stovain has been detected in the spinal fluid twenty-four hours after injection, and traces have been demonstrated in the urine seventy-four hours after injection.

AMERICAN PEDIATRIC SOCIETY

Thirty-First Annual Meeting, held in Atlantic City, N. J., June 16-18, 1919

(*Concluded from page 293*)

Ostogenesis Imperfecta-Congenita

DRS. H. M. MCCLANAHAN and W. W. WILLARD, Omaha: A male child, 3 months old, presented this deformity at birth. Several fractures were present, including fractures of the forearm, thighs and legs. At the time the child came under observation, masses of callus could be felt in the shaft of the thighs, arms and legs. The Wassermann reaction was negative and the von Pirquet test was negative. The child died of exhaustion after being in the hospital about six weeks. So far as I could ascertain, this was the youngest case with a fatal issue reported in which a careful histologic study was made.

DISCUSSION

DR. JOSEPH BRENNEMANN, Chicago: We ordinarily think of these patients as being in a serious condition, yet I have seen one child apparently in perfect health. After having had some kind of nutritional disturbance, its arm became sore and it was found to have a flail joint. A little later the other arm became sore, and it was found that the four long bones of the forearm were broken. No more fractures occurred.

DR. L. EMMETT HOLT, New York: I recently saw a child who had a fracture at the middle of the tibia, and six months later a similar fracture on the opposite side. In another instance a diagnosis of scurvy was made because of tenderness over the bones, and roentgen-ray examination revealed typical fractures. It is apparent that the influence of heredity

is of some importance in these cases. This type of fracture has nothing in common with the green stick fractures.

Dr. Charles Herrman, New York: About half of these cases show a family history of fragility of the bones. It is probable that there is a hereditary factor, but it is not only the bones that are abnormal, but also the ligaments and other structures. Another feature in these cases is the blue sclera, which is present in about half of the cases, and that also shows that the condition is not a disease confined to the bones, but that probably all the tissues of the body are somewhat abnormal.

Do Calories Measure the Value of Food?

Dr. Henry Dwight Chapin, New York: Heat measurement is not always a safe guide for estimating food values. In practice, the tendency is to keep a table of caloric values and to lay out the diet by arithmetic. The physician is likely to think that the caloric count is correct and that when he has met the caloric requirements the food problem is solved. Nutrition is not a simple oxidation process. In the animal body, energy resulting from chemical combinations may be converted into other forms without passing through the form of heat. Foods must be selected for their right physiologic value for each individual.

DISCUSSION

Dr. Fritz B. Talbot, Boston: Physiologists are agreed that conclusions drawn from observations made on animals cannot always be applied to living children. I cannot agree that oxygen is not necessary in the presence of muscular contraction. It has been conclusively proved that every time a muscle moves the production of carbon dioxid is increased, and carbon dioxid cannot form without oxygen. The trouble that has come from caloric feeding in the past is due to lack of knowledge of the foundation on which it is based. Another factor is that some of the food calories are lost in the feces. Twenty per cent. of all protein taken in is consumed in making the remaining 80 per cent. ready for use in the body. The assumption that in using the caloric method of feeding one is using an accurate method is very inaccurate. The baby must first be fed what agrees with it and what it can digest. Second, the food must be well balanced. Third, one must see that the baby gets enough. I do not believe in any method of feeding; at the same time I do not think we should omit anything of value in determining whether or not a baby is getting what is correct, and the determination of calories sometimes helps.

Dr. J. P. Sedgwick, Minneapolis: The estimation of the caloric value of food is a very valuable aid in determining the quantity of food an infant is getting. The determination of calories employed as a method of feeding is a great mistake. The estimation of the caloric value of food is not a method of feeding. One can feed protein or sugar or fat exclusively and still have the requisite number of calories; hence it is very incorrect to use the term "caloric method of feeding."

Dr. F. W. Schlutz, Minneapolis: We should not discard the caloric measure of food altogether. It is about the only one we have for measuring the intake of food. It must be taken in connection with the tolerance for the different food elements.

Dr. W. McKim Marriott, St. Louis: The caloric intake of food is subject to the laws of the conservation of energy and matter. When food is taken into the body it must be utilized in the processes of the animal organism or it must be stored. What is lost through the feces is as though it had never been taken. The difficulty in the caloric estimation of the food intake is that we have not estimated the amount used by the energy output. The error is in our method of making the computation and not in the caloric method.

Dr. L. Emmett Holt, New York: Dr. Roche introduced percentage feeding, and by a misnomer it has come to be known as the "percentage method," in the same way the caloric measure has come to be known as the "caloric method." The estimation of percentages is exceedingly important. The caloric estimation of food values is of importance, but it is a method of statement and not a method of feeding.

Study of Stools of Institutional Children to Determine Existence of Intestinal Parasitic Infection

Drs. Laurence R. DeBuys and H. L. Dwyer, New Orleans: The study of 597 children in seven institutions shows that the frequency of the infections by the various parasites were in the order named: *Trichuris trichiura, Ascaris lumbricoides, Hymenolepis nana, Oxyuris vermicularis, Strongyloides stercoralis, Necator americanus* and *Hymenolepis diminuta.* The hygiene, general care, duration of residence in the institution, previous environment, association with dogs, eating of dirt, and absence of systematic medical inspection, seemed to have a direct bearing on the frequency of intestinal parasites. The symptoms usually attributed to "having worms" were as frequent, and some a little more frequent, in those not infected than in those infected. Eosinophilia is a valuable aid in the diagnosis of infection with intestinal parasites. It is, however, not pathognomonic, and its absence does not exclude an infection. The eosinophils were found as high as 28 per cent. in infected cases and 18 per cent. in negative cases. The diagnosis of intestinal parasitic infection is an extremely easy matter, the only way of making a positive diagnosis being by finding the parasite or the ova in the stool of the individual. Vermifuges should not be given to the child unless it is known that the infection exists and its character is ascertained, when the specific drug may be given to combat the particular infection.

DISCUSSION

Dr. J. P. Sedgwick, Minneapolis: The medical profession is inclined to regard intestinal parasites as of less importance than do the laity. If we look for intestinal parasites, I think we shall find them much oftener than we have heretofore.

Dr. Joseph Brennemann, Chicago: Patients harboring *Ascaris lumbricoides* have come under my observation and have shown no characteristic symptoms.

Dr. Oscar M. Schloss, New York: The symptoms depend on the grade of infection. In one instance a child had a very severe diarrhea with blood and mucus in the stools. These symptoms had persisted for a long time, and even after the infection had cleared up many ova continued to be found in the stools. It is a difficult matter to get rid of them, sometimes taking months of heroic treatment. The oxyuris may be present in great numbers without producing symptoms. Sill has called attention to one symptom produced by this parasite, namely, pain in the right iliac region. I have seen several instances in which marked anemia was present in those infected with dwarf tapeworm; however, in proportion to the amount of infection, the symptoms are very slight.

Dr. Howard Childs Carpenter, Philadelphia: We had an epidemic of *Hymenolepis nana* in a foundling asylum in Philadelphia, where we made a careful study to determine, if possible, the mode of transmission. We trapped rats, but found them negative. It has seemed to me that the transmission was a direct hand to mouth infection. It is difficult to get rid of this parasite. Long after the parasites were no longer found in the stools, the ova were still present.

Dr. W. McKim Marriott, St. Louis: In one case this parasite was found in the appendix. The boy presented the symptoms of appendicitis. The appendix was found to contain oxyuria.

Dr. A. G. Mitchell, Philadelphia: In France, many children are infected with *Ascaris lumbricoides.* Some of these children have acute symptoms which clear up when the infestation is eliminated. In some cases the worms have got into the stomach and the patients have complained of gastric symptoms; others have intestinal symptoms, diarrhea, etc. Whether or not the worms are the entire cause of the symptoms I cannot say; but the general nutrition of the children improves when the infestation is eliminated.

Glucose Tolerance in Atrophic Infants

Drs. H. F. Helmholz and L. W. Sauer, Chicago: In these investigations the Woodyatt apparatus and glucose manufactured by the Corn Products Company were used. The strength of the solutions was made approximately 10, 15 and 20 per cent. The actual concentration was determined polari-

scopically. It is immaterial, so far as tolerance is concerned, whether 10 gm. of glucose is injected in a volume of 10 c.c. or in a volume of 100 c.c., provided it is injected evenly in a given unit of time. If no sugar appeared in the urine in thirty minutes, glycosuria would not occur even after several hours of continuous injection. Injections were made in atrophic and in more nearly normal infants. The tolerance of those more nearly normal did not exceed 1.1 gm. per kilogram per hour, while the tolerance of atrophic infants ranged from 1.5 to 1.8 gm. per kilogram per hour. It appears that the sugar tolerance of normal infants does not differ much from that of normal adults. The tolerance of atrophic infants is considerably greater.

DISCUSSION

DR. OSCAR M. SCHLOSS, New York: In our experimental work we found that by increasing the sugar up to a certain point there will always be an increase of sugar in the urine, even though it is not sufficient to reduce copper solution. Another point of interest is that there may be considerable difference in renal permeability at different times.

DR. W. MCKIM MARRIOTT, St. Louis: We have shown that atrophic infants can take large amounts of sugar. We have administered glucose by mouth and find that as much as 1.5 gm. of sugar per kilogram per hour can be given before glycosuria shows itself.

AMERICAN THERAPEUTIC SOCIETY

Annual Meeting, held at Atlantic City, N. J., June 6 and 7, 1919

The President, DR. DOUGLAS VANDER HOOF, Richmond, Va., in the Chair

Indigestion and Gastro-Intestinal Disorders

DR. DOUGLAS VANDER HOOF, Richmond, Va.: The term "indigestion" has become obsolete. This disturbance is a symptom and not a disease, and yet it is one of the most frequent complaints that brings the patient to seek advice of the physician. I have made a study of 1,000 cases in which the patients complained of "indigestion," and I have tabulated the causative factors. The most frequent cause was found to be chronic appendicitis (one fifth of all cases); together with gallbladder lesions, the causative factor in one third of all cases is accounted for. Peptic ulcer is the cause in one tenth of the cases; kidney and heart disease in one tenth; cancer in less than 4 per cent. of the cases; hypo-acidity in about one sixth of the cases. Miscellaneous conditions, such as pellagra, dysentery, lesions of tonsils and teeth, peritoneal tuberculosis, and hypertrophic spondylitis were found to play a part.

DISCUSSION

DR. THOMAS F. REILLY, New York: Probably the last place to look for stomach symptoms is in the stomach itself. I think that two thirds of the therapeutic measures employed are in connection with stomach symptoms.

DR. JACOB DINER, New York: I am greatly interested in the statistics presented, particularly those dealing with kidney lesions as the cause of indigestion. There is often a nephritis present, usually the chronic interstitial or the parenchymatous kind. In New York City, in social work, 65 per cent. of all complaints are for indigestion. On investigation of the teeth, large pus pockets and alveolar abscesses are found, and if one can persuade these people to have their teeth looked after, the indigestion disappears of itself.

DR. OLIVER T. OSBORNE, New Haven, Conn.: Not enough emphasis is laid on the character of the food taken. One should not starve these patients, but undoubtedly many of them are eating wrong. Young people want to put two meals in one, that is, they drink milk as they would water with solid meals; that is putting too much work on the stomach. There are plenty of dietetic mistakes that the physician could stop, and thereby clear up the indigestion completely.

DR. F. M. POTTENGER, Monrovia, Calif.: The innervation of the intestinal tract and stomach is controlled by the sympathetics and vagus. Stimulation of the former produces inhibition; of the latter, increased activity of the muscle and glands, and causes increased tension throughout the whole gastro-intestinal tract. This tension can produce the whole syndrome of appendicitis as well as that of hyperchlorhydria. The variability of the symptoms is because the stimuli do not explode in every individual alike. The profession has more or less discarded neuroses, but a large group of people are vagotonics, or perhaps the better term is parasympathetics.

DR. DOUGLAS VANDER HOOF: We made the diagnosis of gastric neuroses with considerable hesitation. Many cases were organic and not functional. The functional cases were vagotonics.

Peripheral Irritations and Remote Results

DR. ROBERT T. MORRIS, New York: A child with a bean in the ear responds by nausea and vomiting, caused by the reflex irritations from the cerebral center. In loose kidney, the afferent impulse is sent to the cord center and the efferent impulse disturbs the sympathetic autonomic ganglions. Peripheral irritations lead into many misconceptions in practice because of difficulty in reading the true meaning of the symptoms. Peripheral irritations doubtless cause disturbances, any one of which may cause symptoms, while in the next case no reaction at all is produced by the same sort of stimulus. It becomes, therefore, a question of the character of response made by the patient. If we take as an example a strong, red-blooded man, with 100 per cent. hemoglobin, he will not respond to a peripheral irritation which would upset the sympathetic machinery of another person born with a narrow costal angle, with gunstock scapula, with relaxation of peritoneal supports, with high arched palate—in other words, with defective response and thus increased tendency to react to almost any peripheral irritation. With relaxation of peritoneal supports, with a sagging colon, dragging on the nephrocolic ligaments the kidney will get out of place and never get back again. This may or may not become a second step in the concatenation of the patient's distress. It may or may not send an impulse to the cord center which finds an efferent response, resulting in the disturbance of the entire gastro-enteric system. Disturbance of the digestive function step may cause fermentation and putrefaction on account of the involvement of the gastro-intestinal tract, and the poisoning may induce such a remote result as melancholia and manic-depressive insanity. One has to be particularly on guard against generalization.

Medical Treatment of Goiter

DR. GRANVILLE M. RYAN, Des Moines, Iowa: In treatment, the conditions must be clearly indicated. There has been no result as yet from efforts to find a counteracting agent for the thyroid toxin. Quinin hydrochlorid and salicylates have been used. Tincture of aconite is used to moderate the tachycardia. Attention must be paid to environment and hygienic conditions. Absolute rest, physical and mental, is an essential. An ice bag to the gland and small doses of bromid are indicated in acute exacerbations. The use of quinin and urea sometimes achieves good results. Use of the roentgen ray and removal of the tonsils are indicated in selected cases. The intelligent care of a good trained nurse is the most efficacious step in treatment, proper home care of these patients being practically impossible. In some cases the combined efforts of the medical man and the surgeon are necessary, the medical care preceding the operation, and supplementing it until recovery is complete.

DISCUSSION

DR. O. T. OSBORNE, New Haven, Conn.: No matter how many data the laboratory has furnished, nor how much is read on the subject, the results from therapy must be reached through clinical study. It may be necessary to give some drug, or a dose of a gland to test the case and find out whether the gland is hyperactive or hypo-active or simply absorbed. The rapid heart (130) without dyspnea is *always* of thyroid origin. Exophthalmic goiter is an attempt of the thyroid to counteract the effect of intoxication. Certain cases of this disease are improved by giving thymus. There is no question as to the necessity of rest, proper diet and the avoidance of irritating drugs.

Dr. F. M. Pottenger, Monrovia, Calif.: By studying the patient physiologically, one gets a different attitude to that of experimental study. I am glad to hear that Dr. Osborne puts his faith in clinical observations, rather than laboratory work. There is a long way between a guinea-pig and a man. Clinical study requires the same care and close attention as laboratory work, and close observation will bring out many points.

Dr. H. C. Gordinier, Troy, N. Y.: In early cases the patients recover with nothing but rest, plenty of fresh air and a lactovegetarian diet. Goetsch of Baltimore makes use of the epinephrin test which is a valuable addition to diagnostic methods in hospitals where the calorimetry method can be carried out.

Dr. H. C. Wood, Philadelphia: Symptomatic treatment has its place, for instance, in the control of the tachycardia. There are a number of efficient remedies for reducing the heart rate. Veratrum viride is as accurate as digitalis, and can be used while one is waiting for etiologic treatment to cause subsidence of the thyroid symptoms.

Dr. John C. Hemmeter, Baltimore: Professor Hamburger, president of the last international congress on physiology, in studying the increase of hyperthyroidism in the army in Holland, found it to be 10 per cent. Among the German people it was 8.5 per cent. It will soon be seen in this country in the nature of an epidemic, and preparation must be made to meet it. Ten per cent. of an army of a million means 100,000 cases. Are all these people infected? It would seem more like a physiologic process. The chromatolytic process does not necessarily mean intoxication. Why can there not be a thyroid neurosis, pure and simple?

Dr. W. F. Milroy, Omaha: During the hot season when the streams were dried up, a party of young people were daring each other to cross a ravine over a plank which was about 10 feet from the ground and had no supporting railing. One young woman made the attempt and got across for about 200 feet, when she got dizzy and fell. She was considerably shaken up, and when she came back collapsed entirely. She was assisted home. She immediately became ill and showed at once a markedly enlarged thyroid and marked exophthalmos with a very rapid pulse. She had never had any symptoms before, and was apparently in perfect health when she tried to cross the bridge.

Angina Pectoris

Dr. H. G. Gordinier, Troy, N. Y.: Amyl nitrite and morphin sometimes give relief. Use of tobacco should be limited or prohibited; exercise and diet should be limited. Winters should be spent in the South. Treatment by nitrites is almost specific. Inhalations can be given with large doses of nitroglycerin, and then if no relief comes, morphin and atropin may be given to ward off vagus inhibition. Antisyphilitic treatment should be instituted when a positive Wassermann test is obtained.

DISCUSSION

Dr. Douglas Vander Hoof, Richmond, Va.: The figures in regard to syphilis mean more than mere statements. There is good reason to believe that 20 or 25 per cent. of cases are associated with syphilitic cardiovascular disease. Normal blood pressure, both systolic and diastolic, often exists for years in these cases. In regard to nitroglycerin, one surgeon who could not walk a city block without pain in his chest was enabled to carry on his surgical practice while taking nitroglycerin. Whenever it was necessary for him to walk he put a nitroglycerin tablet in his mouth. Angina is a syndrome, not a disease. Typical angina symptoms are seen in pericarditis in children, in myocardial disease, and in affections of the coronary arteries.

Dr. A. E. Roussel, Philadelphia: The classical symptoms of intense anginal pain need not be accepted as the only manifestation. Although no deaths are caused by indigestion, many symptoms are caused by gas, which are the same type of disease. If these symptoms were recognized and treated, patients would live longer.

Dr. Thomas F. Reilly, New York: There is often the danger of a patient's dying in a second attack, and for that reason the family should be warned of the danger. The physician may give a morphin hypodermic and the family will blame him for the death of the patient. Morphin is of more use than nitrites in angina pectoris, but the attacks are often recurrent.

Dr. H. C. Gordinier, Troy, N. Y.: I had one prominent patient fall down dead after the use of nitrite. It is a wise step to warn the family of the seriousness of the condition, before using morphin.

Rest in Tuberculosis

Dr. Francis M. Pottenger, Monrovia, Calif.: I tried the exercise plan. When I found it did no good I stopped it and tried rest instead, and began to get good results. The question of rest in tuberculosis must be based on something more definite than temperature. It is a question of conserving the patient's strength, and there should be enough energy left at the end of the day to take care of the normal demands of the day, plus the extra demands of the disease, plus reserve power. Fighting power must be conserved to the utmost. Rest and exercise must be applied in the right way. It is not enough to tell the patient to rest, as if he understood how it should be carried out. Most physicians understand very little of the minutiae of the rest treatment. Twenty-five per cent. more energy is required for rest in a chair than for rest in bed; sitting up and conversing requires 45 per cent. more energy. The difference between sitting up and lying down will turn the scale in many cases. Exercise increases the strain on the heart, already burdened by the effects of tuberculosis and the acidity of the blood, thus favoring breaking down of the enzymes, and autolysis. Every patient must be put to bed and kept there as long as there is any question of active tuberculosis. When the disease becomes quiescent, the patient begins to exercise by sitting up, perhaps for five or ten minutes at a time, increasing to twenty or thirty minutes, and then two or three hours. When he can sit up two or three hours without tiring, exercise is started, walking perhaps 50 or 100 feet a day. This graduated exercise means the rehabilitation of the patient, and brings him to the point at which he can walk from 2 to 10 miles a day without getting tired, and without toxemia. If one cannot do that, one has failed. Mental rest is of as much importance as physical rest. Rest and exercise must be adjusted to each individual. The sum of the matter is to treat by rest until the disease is inactive, and then to bring up exercise until the patient is well able to stand it.

Treatment of Influenza and the Pneumonia Incident Thereto

Dr. Jacob Diner, New York: There is no panacea and no standard method of treatment. The rule of treatment in our cases was subject to changes. Instead of digitalis, veratrum viride and aconite, and sometimes nitrites were used. The patient was put to bed in a properly ventilated room, without extremely cold temperature; 70 F. was considered advisable. Warm baths and good covering were provided. Ten grains of quinin and Dover's powder were administered at once. Hot lemonade, whisky and hot water bags to the feet were used. Hot drinks were used as long as the patient was awake, to provoke copious sweating. After twenty-four hours, an alcohol rub and change of sheets was ordered. No other food than milk was used. Cascara was used for the bowels. Nausea and vomiting were avoided on account of the weakening effect. The patient was kept in bed for seventy-two hours after return to normal of the temperature, pulse and respiration. Nourishing food was given at frequent intervals. Attention was paid to blood pressure and, in cases below 110, epinephrin, from 3 to 5 drops of a 1:1,000 solution, was found useful. With persistence of temperature, the case was considered as a potential pneumonia, and quinin and Dover's powder were continued. If râles were heard, hot flaxseed poultices were used every half hour. Digitalis and epinephrin were used. If the patient appeared toxic, 10 c.c. of camphor and olive oil were used. This was later discontinued. If the sputum was tenacious, ammonium salts were given, from 5 to 10 grains well diluted. With liquid expectoration, codein was used. Pleuritic complications were treated by hot applications and strapping, if

necessary, aspiration and thoracotomy. The pleura was irrigated with saline solution. The patients were of the poorest class, those admitted to a charity hospital. Forty per cent. of those admitted died in forty-eight hours; 30 per cent. died within twenty-four hours. The total mortality was 24 per cent. of 642 cases. The mortality under 10 years of age was zero. The next lowest death rate was between 10 and 20 years. The highest mortality was in patients more than 60 years of age. The patients who died seemed to fail from deep, well marked toxemia.

(To be continued)

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

July 15, 1919, 25, No. 4

Homologies of Maxillary and Vomer Bones of Polypterus. E. P. Allis, Jr., France.—p. 349.
Studies of Mammary Gland. IV. Histology of Mammary Gland in Male and Female Albino Rats from Birth to Ten Weeks of Age. J. A. Myers, Minneapolis.—p. 395.
Histology of Blood and Red Bone Marrow of Leopard Frog, Rana Pipiens. H. E. Jordan, Charlottesville, Va.—p. 437.

American Journal of Obstetrics and Diseases of Women and Children, York, Pa.

July, 1919, 80, No. 499

*Tolerance of Freshly Delivered Women to Excessive Loss of Blood. J. W. Williams, Baltimore.—p. 1.
*Analysis of Signs and Symptoms of Early Ectopic Pregnancy. N. S. Heaney, Chicago.—p. 17.
*Nourishment of Pregnant Woman. E. P. Davis, Philadelphia.—p. 23.
*Disease of Appendix and Pelvic Organs in Female. C. G. Childs, New York.—p. 31.
Case of Gastroschisis; Perforated Diaphragm; Anorchidy; Cloaca; Absence of Colon and Rectum; Imperforate Anus; Spina Bifida; Spinal Scoliosis; Sacral Lordosis and Split Pelvis. S. B. Schenck, Brooklyn, N. Y.—p. 38.
New Form of Obstetric Delivery Table. H. C. Ingraham, New York. —p. 46.
*Position of Navel of Man. N. Niwase, Tokyo.—p. 49.
Case of Full Term Ectopic Pregnancy. R. M. Rawls, New York. p. 53.

Excessive Loss of Blood by Pregnant Women.—Williams' study concerning the amount of blood lost during the third stage of labor and shortly thereafter and its clinical effects, is based on observations made on 1,000 consecutive spontaneous full-term labors. In the entire series the average time elapsing between the birth of the child and the extrusion of the placenta was 15.3 minutes, the extremes being spontaneous expulsion immediately following the birth of the child and a difficult Credé expression at the end of ninety minutes. The average bleeding was 343.7 c.c. with the extremes varying from zero to 2,500 c.c., the placental period having been entirely bloodless in two patients. Less than 300 c.c. were lost in 527 cases. Only forty-six patients lost more than 900 c.c. of blood, and 100 lost less than 100 c.c.

Early Ectopic Pregnancy.—Heaney urges that every patient presenting herself with the suspicious symptoms of a threatened, imminent or incomplete abortion should be examined with the possibility in mind that she may have an ectopic pregnancy, more especially if the cramps are located in the side of the pelvis instead of being over the uterus.

Nourishment of Pregnant Woman.—Davis says that especially valuable in pregnancy are the earthy salts and fruit acids contained in vegetables and fruits. Vegetables furnish abundantly substances needed in the development of the skeleton, while fruits and fruit pulp and fruit acids are the best possible laxatives for a pregnant patient and if used with a free supply of water they rarely fail to maintain the action of the bowels. Where indigestion is annoying and persistent, especially valuable is the juice of the fresh lime and also that of the fresh pineapple. Acidity and gastric indigestion may be annoying the patient and lead her to believe that she cannot take acids in any form. In estimating the diet of pregnant patients, the very important part played by water must not be forgotten. At least 1 quart of good water is required in twenty-four hours, and if the patient's metabolism is deficient a mildly saline water will prove of great benefit, but the mistake must not be made in cases where metabolism is deficient, of having the patient drink water in such excess that the kidneys are overcome and cease their function. Fresh air as a means of nourishment is of special importance to the pregnant patient.

Disease of Appendix and Pelvic Organs.—The results of a study in 746 cases are given by Child. He believes that disease of the pelvic organs in the female is an important exciting cause of appendicitis, and to a lesser extent the appendix may be a cause of right adnexal disease. In by far the greater number of cases of coexistent pelvic disease and appendicitis the primary source of infection is in the pelvis. Involvement of the appendix is nearly four times more frequent in right adnexal disease than in left. As the possibility of an involved appendix should always be borne in mind when operating on diseased adnexa, so also should the possibility of diseased adnexa be borne in mind when operating on the appendix. An appendix may be pathologic macroscopically yet not microscopically so, and vice versa, and should always be removed, if possible, when the abdomen is opened. Appendicitis in the female is associated so frequently with pelvic disease, that Child considers it to be a gynecologic condition.

Position of Navel of Man.—An examination of 1,000 persons convinced Niwase that there exists a typical geometric figure with reference to the position of navels. He measured the distance from the superior anterior iliac spine to the upper end of the middle line of the symphysis; from these two points to the under end of the navel and from its upper end to the inferior end of the processus xyphoideus. In most cases the length between the navel and iliac spine, the iliac spine and the symphysis, the symphysis and the navel are quite the same; in other words, the navel exists on the vertex of the right triangle drawn, though not on a plane, but on an irregular spherical surface and stood on the line combining symphysis and superior anterior iliac spine, in 86.8 per cent. of the subjects. This geometric figure with reference to the navel, Niwase terms the umbilical right triangle.

Archives of Ophthalmology, New Rochelle, N. Y.

July, 1919, 48, No. 4

Autogenous One-Piece Epithelial Grafts for Restoration of Eyelids. E. B. Heckel, Pittsburgh.—p. 311.
Revolver Bullet Injury of Both Orbits with Many Eye Symptoms. Preservation of Vision in One Eye, That of Other Remaining Useful, but Below Normal. J. A. Spalding, Portland.—p. 317.
Extirpation of Lacrimal Gland for Relief of Epiphora. C. R. Holmes, Cincinnati.—p. 323.
Radical Treatment of Epiphora. A. Wiener, New York.—p. 334.
Case of Conjugate Deviation of Eyes with Astereognosis. H. A. Riley, New York.—p. 340.
Focal Infections of Eye from Intestinal Tract. J. G. Dwyer, New York.—p. 344.
Treatment of Intestinal Infections. J. J. Connellan, New York. —p. 350.
Autotoxic Factor in Sympathetic Ophthalmia. A. Knapp, New York. —p. 356.
Two Unusual Complications of Herpes Zoster Ophthalmicus: (a) Acute Retrobular Neuritis (Neuritis Axialis); (b) Acute Glaucoma. C. A. Veasey, Spokane.—p. 364.

Boston Medical and Surgical Journal

July 24, 1919, 181, No. 4

What General Surgery Has Gained from the War. H. Cabot, Boston. —p. 79.
Empyema. H. Gage, Worcester.—p. 84.
*Empyema in Children, With Special Reference to Diagnosis. F. S. Churchill, Boston.—p. 87.
Diphtheria, the Uncontrolled. B. W. Carey, Boston.—p. 92.
Bronchitis; Most Significant Disease of War. G. A. Soper, New York.—p. 95.

Empyema in Children.—Churchill claims that empyema in children is relatively infrequent, developing in only about 5 per cent. of the cases of lobar pneumonia. It is gradual in

onset. In all cases of pneumonia, the possibility of its development should be borne in mind and the primary, original disease carefully studied. Its early diagnosis, with fluid small in amount, is often difficult; late diagnosis, with fluid considerable in amount, is easy. The diagnosis in infants and children is more difficult than in adults. Exact examination of the chest, performed daily, is often necessary to detect the condition. A displaced apex beat is an important diagnostic sign. In all cases of pneumonia where fluid in the pleural cavity is suspected, Churchill says, the exploring needle should be used, and if necessary, repeatedly.

Canadian Journal of Mental Hygiene, Toronto

April, 1919, 1, No. 1

Functions of a Psychopathic Hospital. E. E. Southard, Boston.—p. 4.
Scope and Aims of Mental Hygiene Movement in Canada. C. M. Hincks.—p. 20.
Story of Toronto General Hospital Psychiatric Clinic. C. K. Clarke, Toronto.—p. 30.
Neuroses of War. H. P. Wright, Montreal.—p. 38.
Immigration, Past and Future. W. G. Smith, Toronto.—p. 47.
Immigration and Canadian National Committee for Mental Hygiene. J. D. Page, Quebec.—p. 58.
Social Service and Mental Hygiene—A New Course of Training. R. M. MacIver, Toronto.—p. 62.
Subnormal Intelligence as an Educational Problem. P. Sandiford, Toronto.—p. 65.

Endocrinology, Los Angeles

April-June, 1919, 3, No. 2

*Function of Chromaphil Tissues. I. Pearlman and S. Vincent, Winnipeg, Canada.—p. 121.
Death Produced by Tying Suprarenal Veins. F. A. Hartman and W. E. Blatz, Toronto, Can.—p. 137.
*Significance of Epinephrin in Muscular Activity. C. M. Gruber, Boulder, Colo.—p. 145.
*Action of Some Ovarian and Corpus Luteum Extracts on Pupil of Frog's Eye. D. I. Macht and S. Matsumoto, Baltimore.—p. 154.
Physiologic Action of Thyrotoxin. E. C. Kendall, Rochester, Minn.—p. 156.
New Point of View in Approaching Diagnosis and Treatment of Patient. G. Draper, New York.—p. 164.

Function of Chromaphil Tissues.—It seems probable from Pearlman and Vincent's work that the chromaphil tissue, especially, perhaps, the so-called "medulla of the suprarenal" may have important functions connected with the distribution of blood in the body, if not under normal conditions, at any rate in times of nervous and muscular strains.

Significance of Epinephrin in Muscular Activity.—In many experiments performed on perfused, excised muscles, the betterments were so marked and the vasoconstriction so striking that Gruber is convinced that only one conclusion can be drawn, i. e., epinephrin exerts some specific action on fatigued muscle other than that due to mere circulatory changes.

Action of Some Ovarian and Corpus Luteum Extracts on Pupil of Frog's Eye.—It was found by Macht and Matsumoto that the corpus luteum extracts, whether prepared from the fresh gland or from the desiccated product, produced a distinct dilatation of the pupil in from thirty to sixty minutes, depending on the concentration employed. Ovarian extracts, on the other hand, were found to produce very little or no change in the size of the pupil. Inasmuch as the ovarian preparations which were used contained small quantities of corpus luteum, the slight dilatation noted after the use of such extracts is ascribed to the lutein content. The difference between the effects of the ovarian and corpus luteum extracts, however, is so great that the authors regard the ovary and corpus luteum in so far as the effect on the pupil is concerned as being very different glandular bodies.

Indiana State Medical Association Journal, Fort Wayne

July 15, 1919, 12, No. 7

Vaccines and Serums; Their Use and Abuse. B. W. Rhamy, Fort Wayne.—p. 179.
Differential Diagnosis of Affections of Right Upper Abdominal Quadrant. J. S. Nixon, Kokomo.—p. 183.
Differential Diagnosis Between Lesions of Gallbladder and Stomach. B. P. Weaver, Fort Wayne.—p. 186.
Premature Alopecia. O. E. Spurgeon, Muncie.—p. 190.

Iowa State Medical Society Journal, Des Moines

July 15, 1919, 9, No. 7

Our Part in Social Education. J. F. Throckmorton, Chariton.—p. 207.
Infant Feeding. L. S. Dietrich, Marengo.—p. 208.
Thyroid; Its Functions and Diseases. W. J. Herrick, Ottumwa.—p. 212.
Epidemiologic Aspects of Typhoid in Iowa. J. H. Hamilton, Iowa City.—p. 218.
Five Cases of Strangulated Hernia, Complicated by Acute Appendicitis. L. H. Kornder, Davenport.—p. 223.

Journal of Cutaneous Diseases, Chicago

June, 1919, 37, No. 6

*Chaulmoogra Oil in Treatment of Leprosy. H. T. Hollmann, and A. L. Dean, Honolulu.—p. 367.
Lepothrix. J. E. Lane, New Haven.—p. 387.
*Treatment of Erysipelas. W. H. Guy, Pittsburgh.—p. 399.

Chaulmoogra Oil in Leprosy.—In twelve years' experience in the treatment of leprosy, Hollmann has seen cases in which the manifestations of the disease have disappeared and the lesions become bacteriologically negative from the administration of chaulmoogra oil alone. Two patients subsequently had a recurrence of the disease, one within seven months, and one within two years. Twenty-six patients were treated with fractions of the fatty acid isolated by Dean from chaulmoogra oil. Hollmann is convinced that these fractions are superior to chaulmoogra mixtures. They are administered more easily, a much smaller dose is required at each injection, and there is more marked and more rapid amelioration of the disease. In the use of the ethyl ester of these fractions subcutaneously, the authors have noticed reactions in the leprous lesions. In six months' time large nodules have entirely disappeared, leaving deep crater-like scars. Of the twenty-six patients treated, seventeen showed marked improvement; one patient showed slight improvement and only three patients showed no improvement, being under treatment only three months or less. Of the twenty-six patients treated, eight have become bacteriologically negative in less than two years.

Treatment of Erysipelas.—The usual applications were used by Huy from time to time, but boric acid solution is his choice. The general treatment was largely symptomatic. A polyvalent antistreptococcic serum was used in all cases; and 75 per cent. of the cases were influenced favorably. Amelioration of symptoms was too closely connected with the administration of serum to be explained on any other basis. An abortive effect was obtained in two cases seen and injected within the first six hours of the infection. In the majority of cases following the administration of serum there was a fall in temperature, pulse rate and respiration, followed in the course of a few hours by a slowly mounting temperature, which, however, usually did not reach its original height. At the same time the toxemia was lessened and patients were comparatively comfortable. Second and third injections usually acted in the same way, to the end that the course of the disease was in many cases probably shortened, and in most cases certainly modified as to severity. In about 25 per cent. of the cases serum seemed to have absolutely no effect, and in the majority of cases no particular reason could be assigned for this failure of therapy, but two cases were probably accounted for by reason of general debility, one patient having been in bed for some months as the result of a gunshot wound and the other suffering from pulmonary tuberculosis.

Journal of Immunology, Baltimore

March, 1919, 4, No. 2

*Studies in Osmotic Pressure. I. Mechanism of Boric Acid Hemolysis. M. Kosakai, New York.—p. 35.
*Id. II. Nature of Osmotic Pressure. M. Kosakai, New York.—p. 491.

Mechanism of Boric Acid Hemolysis.—After blood corpuscles have been treated for a short time with certain concentrations of boric acid that are not directly injurious to those cells, the sudden immersion of the treated corpuscles in physiologic solution of sodium chlorid causes their complete hemolysis. This "boric acid hemolysis" Kosakai found does not occur if the addition of the physiologic saline solu-

tion is made gradually or if the corpuscles are immersed, even suddenly, in more concentrated solutions of sodium chlorid or of other nonhemolytic substances. That the destructive force responsible for this form of hemolysis is that of "osmotic pressure" is shown by the fact that the minimal nonhemolytic concentrations of all of the substances examined were found to be identical "osmotic concentration."

Nature of Osmotic Pressure.—The results of the experiments made by Kosakai support the conclusion that osmotic pressure is not a direct property of a solute but is solely the pressure exerted by water which has passed, by the yet unexplained process of diffusion, through a semipermeable membrane to the side of the higher osmotic concentration.

Journal of Infectious Diseases, Chicago

June, 1919, 24, No. 6

Anaphylatoxin and Anaphylaxis. XI. Ultra-Filtration and Fractionation of Anaphylatoxin. P. H. De Kruif and A. H. Eggerth, Ann Arbor, Mich.—p. 505.
*Study of Hemolytic Streptococci in Throat and in Empyema. B. Lucke and M. H. Rea, Camp Zachary Taylor, Louisville, Ky.—p. 533.
Sodium Oxy-Mercury-Ortho-Nitro Phenolate (Mercurophen). With Special Reference to Its Practical Value as a Disinfectant. J. F. Schamberg, J. A. Kolmer, George W. Raiziss and M. E. Trist, Philadelphia.—p. 547.
*Serum Studies on Etiology of Influenza. J. A. Kolmer, M. E. Trist, and E. Yagle, Philadelphia.—p. 583.
Epidemic of Pneumococcus Bronchopneumonia. E. F. Hirsch and M. McKinney, Camp Grant, Rockford, Ill.—p. 594.
*Effect of Foreign Protein on Kidney. E. T. Bell and T. B. Hartzell, Minneapolis.—p. 618.
*Spontaneous Nephritis in Rabbits and Its Relation to Chronic Nephritis in Man. E. T. Bell and T. B. Hartzell, Minneapolis.—p. 628.
*Protection Afforded by Various Filters Against Bacterial Suspension in Air. R. C. Tolman, E. W. Guernsey, V. D. Charleston and R. H. Dougherty.—p. 637.

Hemolytic Streptococci in Throat and in Empyema.—Streptococci isolated from the throat and from empyema exudate during the epidemic of the winter of 1917 and 1918, appeared biologically identical and highly virulent as based on criteria mentioned by Lucke and Rea. Their study confirms the observations of others, using immunologic procedures, and gives additional support to the belief that the streptococcus carrier state is an indication of the possibility of complications in respiratory tract diseases.

Serum Studies in Influenza.—The general results of the study made by Kolmer indicate that antibodies and particularly the complement fixing body, are developed in the serums of most influenza patients for *B. influenzae* and to a lesser extent for hemolytic streptococci and *M. catarrhalis;* similar studies were not made with pneumococci. These results, however, cannot be interpreted as an indication that the bacillus of influenza is the primary or chief cause of influenza inasmuch as this bacillus very probably possesses in the majority of cases sufficient pathogenicity to stimulate antibody production as an organism of secondary infection; similar studies with the streptococci of scarlet fever and the micrococci of acute anterior poliomyelitis indicate that what are very probably organisms of secondary infection, may stimulate specific antibody production. In general, the results of this investigation indicate on the basis of antibody production by the various organisms studied, that the bacillus of influenza produces most antibody during the course of the disease, and if this bacillus is not the actual or primary cause of the infection it is at least the chief organism of secondary infection, with streptococci ranking second in antibody production and importance.

Effect of Foreign Protein on Kidney.—The purpose of the investigation made by Bell and Hartzell was to determine whether chronic nephritis can be produced experimentally in rabbits by a foreign protein. Repeated shock was produced in a few animals, but in most of the experiments no attempt was made to produce anaphylaxis. Nontoxic foreign proteins, such as ascitic fluid, do not produce renal injury of any kind in the rabbit when infected intravenously in moderate amounts. The repeated production of anaphylatic symptoms with this protein likewise does not injure the kidney. Egg albumin may produce slight parenchymal injury when injected in large amounts, but usually it causes no damage. Toxic foreign proteins such as sheep serum produce considerable parenchymal injury to the kidney which in some instances seems to lead to the rapid development of a renal infection comparable in all anatomic respects to the ordinary type of spontaneous nephritis. The fact that streptococci were isolated in pure culture from the kidneys of such animals shows that the lesion is essentially infective, and not the direct result of foreign protein or anaphylatoxin. No lesion comparable to human chronic glomerulonephritis has been produced experimentally. There is no experimental evidence that foreign protein is in any way responsible for chronic nephritis in man.

Spontaneous Nephritis in Rabbits.—Bell and Hartzell claim that the investigators who believe they have produced chronic nephritis experimentally have not had controls adequate to exclude the spontaneous disease, and the lesions described correspond closely with spontaneous lesions. No chronic glomerulonephritis has been produced experimentally. There is no anatomic or pathogenetic relationship between spontaneous nephritis in the rabbit and human chronic glomerulonephritis.

Protection by Filter Against Bacteria in Air.—Tests were made by Tolman et al. to determine the degree of protection offered by various filtering materials against suspension in air of *B. prodigiosus.* Buttercloth masks have been found to give inadequate protection against bacteria in this form. Felts are available which give complete protection against air borne bacteria of the size of *B. prodigiosus.* The portable electrical precipitation apparatus of Lamb gives complete protection against bacterial suspensions, killing the bacteria in its action. A mask with a felt filter with an area of 125 square inches and a pressure drop of about 1 inch of water has been constructed which will give complete protection. The efficiency of the buttercloth filter is greatly increased by wetting the cloth. It might be possible to arrange an efficient wet filter mask which would be much simpler, more comfortable, and cheaper than those in which felt is used.

Journal of Laboratory and Clinical Medicine, St. Louis

July, 1919, 4, No. 10

Communicable Disease in U. S. Army During Summer and Autumn of 1918. V. C. Vaughan, Ann Arbor, Mich., and G. T. Palmer, Springfield, Ill.—p. 588.
*Physiologic Investigation into Dynamic Action of Heart in Functional Cardiac Disorders. C. J. Wiggers, Cleveland, and H. D. Clough, Lakewood, N. J.—p. 624.
Effect of Intravenous Diarsenol. W. C. Rappleye, Foxborough, Mass.—p. 630.
*Edestin Method for Estimation of Pepsin in Stomach Contents. P. R. Farrington, and R. C. Lewis, Boulder, Colo.—p. 635.
Turkish Wash Cloths for Packs in Experimental Surgery. F. C. Mann, Rochester, Minn.—p. 639.

Heart in Functional Cardiac Disorders.—A consideration of collected data in the light of physiologic facts Wiggers and Clough state makes possible the following conception as to the cardiac derangement in cases of functional cardiac disorders and at least certain types of compensated organic lesions: The normal heart possesses a mechanism whereby the systole is shortened when the rate is accelerated. This is especially evident when the rate increases beyond eighty per minute. The musculature, while subjected to more frequent periods of contractile stress, is automatically spared to some extent through a shortening of systole. In functional cardiac disorders, this compensatory mechanism (whatever its nature and cause) may be entirely abrogated, or, what is more common, does not become operative until the heart has accelerated to a far greater extent (100 to 120 per minute). In other words, whenever the functionally disordered heart is accelerated above eighty per minute its period of systole is not shortened as is that of the normal heart and consequently the myocardium is exposed more frequently to prolonged period of contractile stress. This condition, favoring the onset of rapid cardiac fatigue is more serious since the hearts of these subjects are usually rapid even at rest. It appears that the same deficiency in the adjustment of systolic length to the duration of the cardiac cycle exists in many organic heart cases. Owing to the fact, however, that the heart rate in these individuals is usually slow, at least during rest and

moderate activity, the myocardium is in this way spared from the consequences of such failure to shorten.

Edestin Method for Estimation of Pepsin.—It is claimed by the authors that the method proposed for the preparation of edestin gives a product of sufficient uniformity to be used in the estimation of peptic activity without the necessity of ascertaining its exact edestin content. The procedure for determining peptic activity gives a clearer end point than that of the pea globulin method, is very practical for clinical use.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

June, 1919, **13**, No. 3

*Action of Drugs on Output of Epinephrin from Suprarenals. II. Concentrated Salt Solutions (Sodium Carbonate) Injected into Circulation. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 167.
*Id. III. Nicotin. G. N. Stewart and J. M. Rogoff, Cleveland.—p. 183.
*Presence of Histamin (B-Iminazolylethylamin) In Hypophysis Cerebri and Other Tissues of Body and Its Occurrence among the Hydrolytic Decomposition Products of Proteins. J. J. Abel and S. Kubota, Baltimore.—p. 243.

Effect of Concentrated Salt Solutions on Output of Epinephrin from the Suprarenals.—Stewart and Rogoff found that intravascular injection of small volumes of concentrated salt solutions (sodium carbonate) causes a temporary increase in the rate of liberation of epinephrin from the suprarenals. They conclude that this increase is presumably due to stimulation of the nervous mechanism which governs the epinephrin output since it is accompanied by symptoms of a general excitation of the bulbospinal centers, and is not obtained or only in a minor degree, when even larger quantities of the carbonate are injected in more dilute form. The authors caution that in experiments on epinephrin output, it is not advisable to use concentrated solutions of salts in tubes connecting an artery with a mercurial manometer.

Effect of Nicotin on Output of Epinephrin from the Suprarenals.—The predominant and by far the most durable action of nicotin, whether administered intravenously or hypodermically, on the epinephrin output Stewart and Rogoff point out is a depressant or paralyzing action. The maximum diminution of the epinephrin output is rather rapidly reached and then there is a more gradual recovery, which when the dose is not too large, proceeds till the original output is approximately attained. At the time of maximum depression no epinephrin at all may be detected in the suprarenal vein blood by the test objects chiefly employed (rabbit intestine and uterus segments). The depressant action is preceded by a transient stage of excitation, lasting, as a rule, in these experiments not longer than from half a minute or less to a minute. In this stage the rate of epinephrin output is markedly increased (from two or three to ten or fifteen times the original output or even more, under our experimental conditions.) The latent period of the transient excitation, with intravenous injection of the drug, is very short. In some of the experiments there was evidence that it could not have exceeded a few seconds. The brief stage of excitation passes rather abruptly into the much more durable stage of depression. The maximum increase in the rate of epinephrin output is followed at a relatively short interval by the maximum depression of the rate, after which begins the gradual recovery. The changes in the rate epinephrin output are roughly parallel to the changes in the blood pressure caused by nicotin, indicating that when the sympathetic ganglion cells on the afferent vasomotor path are being stimulated or depressed, a corresponding stimulation or depression is being exerted on the efferent suprarenal secretory path. The nicotin effect on the epinephrin output is, speaking generally, the converse of the strychnin effect. The nicotin action develops more suddenly than the strychnin action.

Presence of Histamin in the Hypophysis Cerebri.—Histamin, B-iminazolyl-ethylamin, a substance which stimulates plain muscle tissue in minute doses, which depresses the circulation, and which causes a shocklike prostration when administered in doses that lie beyond the limits of toleration, is a widely distributed constituent of all animal tissues, organ extracts and enzymatic products, whether derived from animal or vegetable proteins. Histamin, according to Abel and Kubota, is a constituent of our diet and we daily consume no inconsiderable amount of the base, some of which is present in the form of the free base or a simple salt, while more of it is in all probability produced in the course of digestion. They suggest that histamin plays an important rôle as stimulant for the gastric and intestinal musculature and also as a dilator of capillaries during digestion, and that histamin is the most powerfully acting among the depressant substances which have their origin in mutilated tissues, and hence plays the leading rôle among the chemical factors concerned in traumatic shock. Histamin is the plain muscle stimulating and depressor constituent of the posterior lobe of the pituitary gland.

Medical Record, New York

July 26, 1919, **96**, No. 4

Tuberculosis Problem After World War. S. A. Knopf, New York.—p. 136.
Episcotomy: Its Relation to the Proper Conduct of Perineal Stage of Labor. C. G. Child, Jr., New York.—p. 142.
Explanation and Treatment of Effort Syndrome, Neurocirculatory Asthenia (Soldiers') Irritable Heart. G. E. Barnes, Herkimer.—p. 144.
Poison Gases in Warfare. G. G. Nasmith.—p. 146.

Nebraska State Medical Journal, Norfolk

May, 1919, **4**, No. 5

Immediate and Ulterior Results of Great War in Their Relations to Medical and Surgical Practice, and to Disease Prevention. J. M. Banister, Omaha.—p. 123.
Methods of Dealing With Surgical Patients in Base Hospital Center in France. H. W. Orr, Lincoln.—p. 127.
Hospital for Tuberculous. L. T. Sidwell, Kearney.—p. 129.
Surgery of Prostate. E. A. Watson, Grand Island.—p. 130.
*Bacterial Findings in Abscessed Teeth in Children. A. L. Smith and R. W. Ludwick, Lincoln—p. 131.
Dental Infections from Viewpoint of Roentgenologist. R. L. Smith, Lincoln.—p. 134.

July, 1919, **4**, No. 7

Hospital Standardization and Medical Efficiency. J. S. Welch, Lincoln.—p. 193.
Postoperative Care of Surgical Patients, Lesson Learned from Army Methods. A. J. Brown, Omaha.—p. 197.
Evolution of Suprapubic Operation of Prostatectomy, and Its Latest Status. J. E. Summers, Omaha.—p. 202.
Diverticulitis and Peridiverticulitis. M. Emmert, Omaha.—p. 208.
Herniotomy Under Local and Spinal Anesthesia. H. B. Boyden, Grand Island.—p. 210.
Heat and Cold In Surgery. C. H. Breuer, Lincoln.—p. 212.
Roentgen Diagnosis of Kidney Lesions. R. L. Smith, Lincoln—p. 216.
Lip Reading: An Aid to Hard of Hearing Adults. E. B. Kessler, Omaha.—p. 217.
Human Infection Carriers; Their Significance, Recognition and Management. C. E. Simon, Baltimore.—p. 218.

Bacterial Findings in Abscessed Teeth in Children.—In these 107 cases Smith and Ludwick found the *Streptococcus hemolyticus*, 26 times; *Streptococcus pyogenes*, 19 times; *Streptococcus viridans*, 2 times; *Staphylococcus pyogenes-citreus*, 9 times; *Staphylococcus aureus*, 36 times; *Staphylococcus pyogenes-albus*, 7 times; *Bacillus pyocyaneus*, once; *Diplococcus pneumoniae*, 18 times; *Micrococcus catarrhalis*, 4 times; *Bacillus fusiformis*, *Spirochete vincenti* (Vincent's angina), once; a diphtheroid bacillus, 3 times. In eight cases the pus was sterile.

New Jersey Medical Society Journal, Orange

April, 1919, **16**, No. 4

Present Status of Cancer Problem. L. D. Bulkley, New York.—p. 111.
Control of Venereal Diseases. L. L. Davidson, Newark.—p. 114.
An Original Device for Control of Hemorrhage from Large Sinuses of Brain by Invulsion of the Outer Wall into the Lumen. W. P. Eagleton, Newark.—p. 116.
Public Health and Child Hygiene. E. S. Hamblen.—p. 118.

New York Medical Journal, New York

July 26, 1919, **110**, No. 4

Influenza and Bronchopneumonia at Camp Lewis. W. J. Kerr, San Francisco, H. K. Berkley, Los Angeles, and T. H. Coffin, Portland. p. 133. To be cont'd.
Case of Syphilis with Mild Relapsing Symptoms Fifty-Five Years after Inoculation. V. C. Pedersen, New York.—p. 140.
Cardiovascular Response to Infection. S. E. Earp, Indianapolis.—p. 141.
Interpretation of Serologic Formulas. D. M. Kaplan, New York.—p. 144.

Tuberculin in Tuberculosis. M. Staller, Philadelphia.—p. 148.
Mental Mechanisms in the Psychoses and Neuroses. P. R. Lehrman, New York.—p. 150.
Souvenir of My Captivity; Typhus at Cassel. H. Poisson.—p. 152.

Northwest Medicine, Seattle, Wash.

July, 1919, 18, No. 7

The Physician and Service. C. M. Barbee, Portland.—p. 123.
Hypothesis on Influenzal Pneumonitis. E. O. Houda, Tacoma.—p. 130.
When Teeth are a Source of Focal Infection. J. B. Schlund. Tacoma. —p. 134.
Two Cases of Melanotic Sarcoma of Choroid. C. A. Veasey, Spokane. —p. 137.

Ohio State Medical Journal, Columbus

March 1, 1919, 15, No. 3

What Physicians can do to Help Bureau of Juvenile Research. H. H. Goddard, Columbus.—p. 144.
Limitations of Cesarean Section. E. G. Zinke, Cincinnati.—p. 150.
The Industrial Cripple. W. G. Stern, Cleveland.—p. 153.
Some Practical Suggestions for Living Under Allen Treatment. M. L. Arnold, Columbus.—p. 159.

Southwestern Medicine, El Paso

June, 1919, 2, No. 18

Our Purposes. W. W. Watkins, Phoenix.—p. 1.
Surgery of Appendix. J. H. Morford, El Paso.—p. 9.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

June, 1919, 24, No. 1

Some Biologic Effects of Small Quantities of Radium. W. S. Lazarus-Barlow.—p. 1.
*Osseous Abnormalities of Foot Which Cause No Discomfort. G. A. Pirie.—p. 12.
*Unusual Case of Torticollis. R. W. A. Salmond.—p. 14.
Mobile Roentgen Ray Wagon Unit. H. C. Head.—p. 15.
Spastic Paralysis of Deltoid Muscles; Leukoplakia; Lagophthalmus. J. D. Harris.—p. 28.

Osseous Abnormalities of Foot which Cause No Discomfort.—Pirie reports two cases in which pain in the foot was caused by the fact that the scaphoid of each foot had been developed from two centers, and the parts remained distinct.

Unusual Case of Torticollis.—A man was grazed on the back of the shoulder by a piece of shrapnel. A typical and well marked torticollis developed at once, lasted for a week, and then gradually passed away completely. On roentgen-ray examination, the second and third ribs were found to be fractured near their vertebral articulations, the seat of the fracture in the second rib corresponding to the attachment of the scalenus posticus muscle. Salmond concludes that the torticollis was, no doubt, due to the head and neck being involuntarily held in the position of greatest rest to the scalenus posticus muscle, and, perhaps, in a lesser degree, to one or other of the deep seated muscles of the back, and its extension into the neck; in other words, it was Nature's method of keeping the fracture at rest while it was uniting.

British Medical Journal, London

July 5, 1919, 2, No. 3053

Old Humanities and New Science. W. Osler.—p. 1.
*Diagnosis of Tuberculosis by Complement Deviation Method. C. Y. Wang and J. Crocket.—p. 7.
Will the Use of Scopolamin and Morphin in Labor Help to Improve Birth Rate? W. O. Greenwood.—p. 9.
*Cure of Multiple Warts on Face. C. Ind.—p. 11.
Significance of Cerebral Cortex. G. E. Smith.—p. 11

Diagnosis of Tuberculosis by Complement Deviation Method.—Wang and Crocket use a tubercle antigen which is essentially the bodies of the tubercle bacilli after their fatty substance has been removed. The syphilitic antigen is an alcoholic extract of the human heart, with or without the addition of cholesterin. The patient's serum is collected as for a Wassermann test from an arm vein with a needle. The blood suspension is prepared from defibrinated ox blood, which at the final washing should be spun at a fixed speed for a definite time, so that approximately the same thickness of blood is obtained each time. The complement used is that of guinea-pig serum from 4 to 18 hours old. This investigation deals with the examination of serums from 104 tuberculous subjects and 220 controls. Of the tuberculous, in fifty-seven cases tubercle bacilli were found in the sputum, and in forty-seven they were absent. Altogether forty-nine patients had received tuberculin treatment at one time or another. The controls were 100 positive and 100 negative Wassermann serums, and of twenty serums taken from persons clinically known to be free from tuberculosis. The findings of the cases investigated, therefore, furnish 85 per cent. positives out of 104 tuberculous subjects. As none of the controls reacted positively to the test, it may be justifiable to regard the test as specific, and where a reaction is provoked a diagnosis may safely be pronounced, not only that the disease is present, but also that the lesion is in an active condition. Here, as in the Wassermann test, a negative finding is significant, though inconclusive. The nonspecific reaction which other observers have found was due, the authors suggest, to the presence of lipoids in their antigen and, in part, also to the tested serums being insufficiently heated.

Cure of Multiple Warts on Face.—The use of a saturated alcoholic solution of salicylic acid followed by abscission was surprisingly effective in Ind's case. The warts and skin around were painted three times a day for one day with this liquid. On the following morning the warts were cut off by a flat sharp steel instrument, bevelled on one side only; this passes freely over the healthy skin, but when it comes to the wart it is cut off, leaving a slightly bleeding point. The surface is painted at once with the salicylic solution and twice more later during the same day, three times in all. This turns the little red points a brownish black color, tiny scabs form which are allowed to drop off, taking about a week to do so, and leaving a perfectly clear healthy skin. The forehead is bathed with pure alcohol once a day until the scabs have all dropped off. There is neither pain nor scarring, and sepsis does not occur. The treatment is useless for larger warts. The use of the salicylic solution prevents pain when the warts are cut off and also prevents recurrence afterward.

Glasgow Medical Journal

July, 1919, 10, No 1

Relics of William Hunter. A. Napier.—p. 1.
Syphilis of Nervous System and Its Treatment. I. Mackenzie.—p. 4.
*Investigation Into Phenomena of "Serum Disease"; Relation Between Its Various Forms and Proteins of Horse Serum. T. G. Davidson. p. 20. To be Cont'd.
With the 1/1st Lowland Field Ambulance in Gallipoli. G. H. Edington.—p. 30.

Phenomena of "Serum Disease."—A study by Davidson of the clinical and statistical differences between the three types of rash noted in serum disease has disclosed that these rashes differ from each other: (*a*) in their clinical appearances and manifestations; (*b*) in their relative frequency of occurrence; (*c*) in their minimum and maximum incubation periods and in the length of the interval of time between these two points; (*d*) in their average incubation periods; (*e*) in their order of occurrence; (*f*) in the character and course of their graphs; (*g*) in their duration. The relative frequency of occurrence of the three types is urticarial most, morbilliform less, and circinate least frequent. The order of occurrence of the three types is urticarial first, morbilliform second and circinate last. These findings suggest the possibility of the cause of each type of rash being also different and distinct. The distinction between the three types of rashes becomes even more marked in an investigation of some of the accompanying symptoms of "serum disease," and the theory that the causal factor in each type is not the same but of different origin is considerably strengthened. The most important accompanying symptoms are pyrexia, joint pains, edema, enlarged glands, and increase in the cardiac dulness.

Japan Medical World, Tokyo

June 22, 1919

*Studies on the Nature of Anaphylactoid Symptoms Caused by Repeated Intravenous Injection of Arsphenamin and Its Prevention. N. Hirano.

Nature of Anaphylactoid Symptoms Caused by Repeated Intravenous Injection of Arsphenamin.—On the basis of Millian's report that he had successfully prevented the development of anaphylactoid symptoms by the previous administration of epinephrin, and by his experience that it may develop severely in a patient having involvement in the suprarenals, such as a thymicolymphatic constitution or Addison's disease, Hirano concluded that there must be some intimate relation between arsphenamin and the suprarenal. The results of various experimental studies showed that by the administration of arsphenamin there occurs a sudden consumption of epinephrin in the circulating blood and the consequent supply of the deficit may not always be effected by the suprarenals, when anaphylactoid symptoms develop. This conclusion has been drawn from the following facts ascertained by experiments: 1. Arsphenamin anaphylactoid symptoms may be prevented by the previous administration of epinephrin. 2. Arsphenamin and neo-arsphenamin interrupt, to a certain degree, the epinephrin sublimate reaction in vitro. 3. The blood serum of the animals that received the intravenous injection of either arsphenamin or neoarsphenamin contained a smaller quantity of vasocontractile substance than did the normal serum, if the serum was prepared from the blood withdrawn immediately after the injection of arsenic compounds. 4. The epinephrin content of both suprarenals decreases after the injection of arsphenamin. 5. A slight increase of the epinephrin content of the suprarenals was noted in rabbits that had been treated with repeated injections of arsphenamin. If a therapeutic dose of arsphenamin be given to the animals that had been thus treated, no remarkable decrease of the epinephrin content would ensue. But if the previous treatment was made with neo-arsphenamin, the epinephrin content of the suprarenals would indicate a remarkable decrease.

June 29, 1919

*Tsutsugamushi Disease: Results of Investigation during 1918. N. Hayashi, Muskoyama, and Oshima.

Tsutsugamushi Disease.—The authors collected as many specimens as possible from one infected region examined them and found that there are three different forms of the infecting organism. Only one form was found to give infection to the host. The mites are not only found infesting the field voles but also domestic fowls and a bird, *Acrocephalus orientalis*. The fact that these birds harbor the mites is a very important fact to know. This fact alone will make the elimination of the source of infection most difficult. It will also favor the distribution of the disease to a wider region. The field voles that harbor the mites live in a very restricted region along the rivers, while the bird has a wider habitat. The prevention of the disease has been experimentally carried out. The method consists in (1) the use of overalls in the field work; (2) the disinfection of the soil, and (3) the application of chemical preparations, especially insecticides to the exposed parts of the skin. By the use of the overalls and the insecticides, good results have been obtained, but the disinfection of the soil is very difficult to attain. The best way of extirpation of the infection seems to consists in the use of the overalls and the insecticides and the extirpation of the hosts of the akamushi, i. e., the field voles, the birds, etc.

Journal of Tropical Medicine and Hygiene, London

July 1, 1919, **22**, No. 13

Case of Pentosuria Contracted in Tropics. A. Castellani and F. E. Taylor.—p. 121.
*Acquired Cranial Deformity. P. M. Brett.—p. 122.
Bosch Yaws, the Dermal Leishmaniasis of Dutch Guiana. E. Bonne.—p. 122.

Acquired Cranial Deformity.—Among the Mombettu tribe of Bantu stock which lives in the Haut-Uele district of the Belgian Congo the mothers artificially deform their infants' heads. It is their custom to compress the child's head by tight bands made of fiber. As the little skull grows it assumes an elongated shape. This deformity remains when adult life is attained and becomes a distinctive feature of the tribe.

Lancet, London

July 12, 1919, **2**, No. 2

Spread of Bacterial Infection. W. W. C. Topley.—p. 45.
*Streptococcal Infections of Septic Wounds at a Base Hospital. A. B. Porteous.—p. 49.
*Certain Organisms Isolated from Cases of Influenza. H. J. B. Fry.—p. 51.
Results to be Expected from Antenatal Care. E. Holland.—p. 53.
Pneumokoniosis in Man and Horse. W. C. Rivers.—p. 55.
Tuberculosis from a West Indian Standpoint. J. Geoghegan.—p. 56.
*Influenzal Pneumonia: Bacteriology of Complications in Fatal Cases. O. Heath.—p. 58.

Streptococcal Infections of Septic Wounds at a Base Hospital.—Porteous suggests that, as a rule, it is not the circulating blood which is at fault in cases of streptococcal septicemia, and in all probability there is some deficiency in the local protective mechanism which allows access of the streptococci to the blood stream. It would seem to follow, also, that for the successful treatment of a case of septicemia the most essential element would be the thorough local treatment of the infected focus. It has been observed that when an infection has become circumscribed by the collection of leukocytes in the walls of the wound and by the other factors which operate locally in this connection, it is very difficult to graft a serious streptococcal infection on the wound. It follows from this that the utmost care should be taken in the first few days after the injury to keep out the streptococcus and to avoid any treatment which will inhibit the development of the defensive processes. In the after-treatment fresh tissue should only be opened up when there is a very urgent necessity.

Certain Organisms Isolated from Cases of Influenza.—In the course of an investigation of material derived from cases of influenza during the three waves of the present epidemic, when searching for Pfeiffer's bacillus, gram-negative, "Pfeiffer-like" bacilli were frequently isolated. They were not, however, hemophilic and grew rapidly and readily on ordinary agar. They have been isolated by Fry from sputum, postmortem material and in blood culture. The organisms derived from the latter source were isolated from the blood of two German prisoners, out of four cases examined, at the commencement of the third wave of the epidemic in February, 1919. The camp to which the prisoners had belonged had escaped the two previous waves, but was overwhelmed by the present one, a large proportion of the prisoners being severely attacked. The organism was obtained in 2 per cent. glucose broth and appeared in twenty-four hours in the blood culture, as round or oval, gram-negative "yeastlike" bodies, from 3 to 5 microns long and from 2 to 4 microns broad. Subculture to agar produce gram-negative bacilli, varying in size from coccal or coccobacillary forms to short filaments. The "yeastlike" bodies rapidly disappeared from the blood culture, and were replaced by clumps of gram-negative bacilli, in the neighborhood of which could be seen, in some cases, gram-negative amorphous masses, resembling the ruptured envelopes of the above mentioned "yeastlike" bodies.

Bacteriology of Influenzal Pneumonia.—Pneumococcal or streptococcal organisms were found by Heath in sixteen postmortems; in two out of three serous fluids taken during life; and in nineteen out of twenty sputums examined bacteriologically. Emphasis is laid on the hemorrhagic and infective nature of the fluids found postmortem. Attention is drawn to the high percentage of fatal cases which came from "low category" units.

Bulletins de la Société Médicale des Hôpitaux, Paris

May 23, 1919, **43**, No. 18

*Lethargic Encephalitis. G. Etienne.—p. 482; H. Claude and H. Schaeffer.—p. 521.
*Serodiagnosis of Typhus. Vialatte, Collignon and H. Bénard.—p. 484.
Fatal Influenza with Progressive Azotemia, Libert.—p. 489.
Urticaria after Intravenous Injection of Electrargol, Libert.—p. 492.
*Injection of Air in Treatment of Traumatic Hemothorax. P. Emile-Weil and Loiseleur.—p. 494.
*Blood Cysts in Pleura or Lung. Sergent and Pruvost.—p. 497.
*Wassermann Reaction in Scarlet Fever and Measles. L. Laederich and L. Bory.—p. 504.
*Convulsions after Gassing. G. Blechmann.—p. 507.
Syphilitic Parotitis. A. Lemierre.—p. 510.

Paratyphoid A Thyroiditis. A. Lemierre and Taberlet.—p. 513.
*Meningococcus Septicemia. A. Lemierre and P. Lantuéjoul.—p. 515.
*Bronchial Spirochetosis. G. Delamare.—p. 526.

Lethargic Encephalitis.—Etienne's patient was a girl of 17 who suddenly developed diplopia and slept for three weeks. She then recovered except for slight facial paralysis. The spinal fluid seemed to be normal in every respect throughout. An elderly man about the same time suddenly developed delirium and high fever, then deep somnolency, with death the second day. Claude and Schaeffer's patient was a woman of 42 and the somnolency had followed a week of headache. Ptosis was complete, and the woman died in less than three weeks. The temperature was high toward the last but the spinal fluid was clear and under normal pressure. Necropsy disclosed lesions of acute encephalitis in the isthmus of the brain, lower portion of the bulb, and the opto-striated nuclei. The lesions closely resembled those of Wernicke's polyencephalitis except for the absence of hemorrhagic foci. Aside from the special seat of these lesions, they differed also in other respects from the lesions of ordinary acute encephalitis, particularly encephalitis following influenza, in which edema of the brain is the predominating lesion.

Serodiagnosis of Typhus.—The agglutination of the Proteus X was pronounced in the forty cases of typhus reported.

Treatment of Hemothorax.—Weil and Loiseleur treat traumatic hemothorax by puncture and injection of air or nitrogen, and they expatiate on the advantages of this procedure, describing three illustrative cases. They consider it important to filter the air as the blood offers a good culture medium for germs.

Encysted Hematoma in Pleura or Lung.—Sergent and Pruvost remark that they do not know of any systematic study of this subject that has been published. With roentgen examination such hematomas are readily recognized, and the history of a trauma or unexplained hemoptysis will give the clue. Otherwise chronic pleurisy or hydatid cyst may be suspected. In one of the three cases described, a boy of 9 had hemoptysis after long violent running; in another case there was a history of a contusion. The blood may be evacuated through the air passages or it may become permanently encysted; even after evacuation of the cyst the walls may be so stiff as to hamper the movements of the lung.

The Wassermann Reaction in Eruptive Diseases.—Laederich and Bory found in 20 cases of scarlet fever, 4 of smallpox and 13 of measles that these acute infections modify the blood serum in the same way that syphilis does, only less intensely and only for about two weeks at most.

Convulsions After Gassing.—The convulsions, loss of consciousness and rise in blood pressure that followed exposure to mustard gas all subsided at once after withdrawal of 500 gm. of blood. The case teaches the importance of determining the blood pressure and bringing it down to normal by venesection in certain cases, the other symptoms being likely to retrogress with this.

Meningococcus Septicemia.—Lemierre was unable to detect the meningococcus in the blood, spinal fluid, throat or skin lesions, but the agglutination test cleared up the case and permitted effectual serotherapy. The infection induced intermittent fever and recurring eruptive phenomena, thyroiditis, epididymitis, orchitis and parotitis, with only a slight meningeal reaction. The fever every evening for four months suggested malaria. During the febrile attacks there were severe pains in legs and lumbar region, and in time there was some muscular atrophy in the legs, but there was never any Kernig sign or stiffness of the back of the neck and only occasionally was there any headache and then it was mild. The appetite kept good most of the time. Repeated bacteriologic examination of the blood was negative but a neutrophil polynuclear leukocytosis pointed to some bacterial infection.

Bronchopulmonary Spirochetosis.—Delamare recalls that recurring hemoptysis is characteristic of this affection, as also the fetid sputum. Arsenic treatment gives good results in the cases not complicated with tuberculosis. Emetin does not seem to benefit.

Journal de Médecine de Bordeaux

June 25, 1919, 90, No. 12

Principal Factors of Congenital Debility. A. Moussous.—p. 235.
*Infant Mortality at Bordeaux. Chambrelent.—p. 240.
Asylum for Pregnant Women. Chambrelent.—p. 245.
Asylum for Infants. Rocaz.—p. 246.
Model Milk for Young Children. Rocaz.—p. 249.
*Cure of Neuralgia under Fixation Abscess. Roumaillac.—p. 250.

Infant Mortality in French Cities During the War.—Chambrelent relates that the infant death rate at Bordeaux had reached in 1910 to 1912 its lowest point, namely, 10.9 per cent. but during the war it gradually increased until it was 23.1 per cent. in 1918. At Toulouse a similar rise was recorded, from 11 to 21 per cent.; at Marseilles, from 11 to 17 per cent., and at Rouen from 19.6 to 25. At Paris, from 15.51 in 1913 the infant death rate progressively declined to 13.96 in 1918. At Lille it was lower than ever known before, dropping from 20 in 1913 to 15.4 in 1918. Calmette ascribes this to the fact that as no factories were running at Lille the women stayed at home with their infants, and as not a drop of cow's milk was obtainable during the four years of the war, breast feeding was universal. It was supplemented by the condensed milk furnished at first by the American and later by the Spanish-Holland relief board. Calmette in a recent report commented most favorably on the excellence of this system of infant feeding. Even on condensed milk alone there were no more of the gastro-intestinal disturbances to which from 18 to 21 per cent. of the infants formerly had succumbed. The infant dispensaries and well baby stations were maintained at Lille throughout the war as before. The infant death rate at Paris was also the lowest ever known there. Ample dairy facilities had been provided for the city, fearing a siege, and the children had first-class milk throughout. This was not done at Bordeaux and the high death rate among infants shows the penalty. Chambrelent extols the valuable work done by two institutions at Paris where needy pregnant women are given a home until ready for the Maternity. One of these institutions has provisions for the woman's bringing her small children with her. A third institution is open day and night to shelter any woman in need. He urges the necessity for similar institutions elsewhere.

Fixation Abscess Cures Neuralgia.—The woman of 34 in the case described by Roumaillac had had for five years agonizing right trigeminal neuralgia, the attacks often coming on several times a day, evidently from autointoxication. An injection of 1.5 c.c. of turpentine, old and yellow, was then made in the left thigh. It induced a violent reaction, almost a diffuse phlegmon, but the neuralgia stopped at once and there has been no recurrence during the four years since.

Le Nourrisson, Paris

May, 1919, 7, No. 3

*Congenital Stenosis of the Pylorus. A. B. Marfan.—p. 129.
*Athrepsia in Inherited Syphilis. Ribadeau-Dumas and Faroy.—p. 146.
Influenza in Young Infants. C. Achard.—p. 163.
*Boarding Out Infants in the Country. P. F. Armand-Delille.—p. 166.
*Latent Meningeal Reactions in Inherited Syphilis. Lavergne.—p. 172.

Congenital Stenosis of the Pylorus.—Marfan remarks that this anomaly is very rare in France and in all Latin and Slavic countries. The infants take the breast or bottle as if famished, but soon drop it and seem to suffer pain, and there is pronounced oliguria as the children drink little and vomit profusely. One infant in his service died the thirty-eighth day after birth with nervous symptoms suggesting the action of a poison formed in the stagnating stomach contents. The congenital stenosis may cause no appreciable disturbance for a few years and then, under some inflammatory swelling or spasm, the pylorus may become impassible for the first time at the age of 2, 3, or even 11 or 12. After excluding esophageal regurgitations and merycism or rumination, the differentiation from ordinary habitual vomiting is based on the shortness of the periods of relative relief, on the absence of alternating periods of constipation and diarrhea (common with habitual vomiting), and on the roentgen findings. Further evidence is afforded by the lack of improvement under ordinary medical treatment. If no benefit is apparent

in three weeks, operative measures should be considered. His illustrations of the pathologic anatomy of congenital stenosis of the pylorus show the futility of expecting benefit from medical measures alone with complete impermeability.

Athrepsia with Inherited Syphilis.—The defective development liable with inherited syphilis in the liver, pancreas and parotid is shown by examples with four illustrations. The profound changes found in these organs readily explain the imperfect digestion of these infants. Specific treatment must be begun very cautiously, with milligrams rather than centigrams, as some children with inherited syphilis cannot bear specific treatment.

Boarding Out Infants in the Country.—Armand-Delille describes as a model to be imitated the working of the Speedwell Society in New York, which makes a specialty of boarding out weakly infants in a village readily accessible from the city. Each of the villages has its unit of a resident physician and visiting nurse. The nurse takes to each infant daily its quantum of nursing bottles, adapted to its age and condition, one nurse for twenty infants being the ideal. The board money, $14 a month, and the expense of the milk, $5, and of the clothing and medicines, plus the salaries of the physician and nurse do not total over $1.15 a day, which is less than it would cost to keep the child in the hospital in New York. This society has been at work for fifteen years, he relates, and has thus cared for 3,500 friendless infants, many of whom have thus found permanent homes.

Latent Meningeal Reactions with Inherited Syphilis.—Lavergne has done lumbar puncture on infants in Marfan's hospital service even when there was nothing to suggest meningitis. The findings in the infants and older children confirm the rule that with inherited syphilis any changes in the cerebrospinal fluid should be considered as demonstrative as any other symptom eslsewhere, and should call for energetic treatment, mercurial and, if possible, arsenical, until the lymphocytosis has disappeared. The lymphocytosis and albuminosis testify that the nervous system has been touched, to a certain extent. A spontaneous cure is possible but it is folly to count on it. Complications may be developing which will entail destructive lesions that might have been warded off by treatment in time, repeated until the puncture fluid no longer shows lymphocytosis.

Paris Médical

June 14, 1919, **9**, No. 24

*Epidemic Scurvy. A. Benoit.—p. 469.
*Diffuse Encephalomyelitis and Lethargic Encephalitis. R. Cruchet.—p. 474.
Giant Polyps in the Bladder. F. Cathelin.—p. 478.
Manganese in Treatment of Tuberculosis. S. Mélamet.—p. 481.

Epidemic Scurvy.—The severe scurvy affected suddenly and simultaneously sixty-three men in a body of 350. The clinical picture reached its acme the second day, and after this day subsided, as if by magic, regardless of the treatment or lack of treatment or dietetic conditions.

Encephalomyelitis and Lethargic Encephalitis.—Cruchet states that in nine months (1917) he encountered forty cases of what seemed to be a subacute encephalomyelitis. The lethargic encephalitis described by others seems to him to be the same disease. He gives the details of some more recent cases and reiterates that any connection with influenza seems improbable as his early series was before the pandemic was heard of. Probably the cause is not single.

Presse Médicale, Paris

Feb. 24, 1919, **27**, No. 11. Rec'd July 21, 1919

*Intravenous Injections of Peptone in Infectious Diseases. P. Nolf.—p. 93.
Localization of Tuberculous Processes in Fissures of Lungs. Piéry.—p. 95.
Phases of Influenza Epidemic. F. Trémolières and M. Rafinesque.—p. 98.

Intravenous Injection of Peptone in Treatment of Infectious Disease.—This subject was brought down to date by Professor Nolf in his address presented at the Atlantic City Meeting, and summarized in THE JOURNAL, June 28, 1919, p. 1901.

Progrès Médical, Paris

May 31, 1919, **35**, No. 22

*Carbon Dioxid Snow in Treatment of Skin Lesions. L. Lortat-Jacob and G. Vitry.—p. 209.
*Mineral Waters in Treatment of Sequelae of Intestinal Infections. J. Baumann.—p. 211.
Some Indispensable Formulas in Dermatology. L. Bory.—p. 213.
*Syphilitic Pott's Disease. A. Aimes.—p. 214.

Carbon Dioxid Snow in Treatment of Skin Lesions.—Lortat-Jacob extols the benefit from localized freezing of the tissues in treatment of certain skin affections, but he has abandoned the use of the carbon dioxid pencil as not ensuring precision in the application. He uses what he calls a cryocautery, the carbon dioxid snow being formed within it and then acetone is added. This dissolves the snow but does not reduce the temperature. Its advantage is that it allows a more perfect contact of the snow with the skin. An index shows the graduated pressure; the time can be estimated by the watch. He ascribes the benefit from this treatment to the intense modification in the circulation as there is no sterilizing action from it.

Mineral Waters and Sequelae of Enteritis.—Under the heading "Practical Hydrology" the *Progrès* is publishing a series of articles on the mineral waters and spas of France, and the indications for their use.

Syphilitic Pott's Disease.—Aimes discusses the points which aid in differentiating syphilitic from tuberculous caries of the spine. He suggests that the rarity of syphilitic Pott's disease may be due simply to blunders in diagnosis. It is rare with inherited syphilis; it almost invariably affects men, and the usual location is in the cervical vertebrae. Cases are known in which sequestrums from the vertebrae were expelled through the mouth. When syphilitic excrescences can be detected, the diagnosis is facilitated. The pain is not relieved by repose, as with true Pott's disease, and exacerbation of the pains at night is characteristic. The prognosis depends on the phase in which treatment is begun, before irreparable lesions have become installed. The complications may include paralyses, dysphagia, sphincter trouble or even sudden death as in four cases on record. Radioscopy may reveal osteophytes. Even if syphilis and tuberculosis are both present, the benefit may be great from proper treatment of the syphilis. Vertebral sarcoma is generally secondary.

Correspondenz-Blatt für Schweizer Aerzte, Basel

May 31, 1919, **49**, No. 22

*Biologic Test for Active Tuberculous Focus in the Human Body by the Response to Intradermal Injection of Auto-Urine. H. Wildbolz.—p. 793.
Etiology of Influenza. J. L. Burckhardt.—p. 809. Cont'n.

Biologic Test for Active Tuberculosis.—Wildbolz reports that his research during the last year and a half and experiences with more than 200 persons have demonstrated that when there is an active process of tuberculosis the urine contains an antigen which injected by the Mantoux intradermal technic induces infiltration and redness. This does not occur with urine from healthy persons or in urine from persons with healed tuberculous processes. It never occurs unless the person gives a positive response to injection of 1:10,000 tuberculin, but it seems to occur whether the urine is from the person being tested or not, so long as he has an active tuberculous process anywhere in the body, in glands, peritoneum, lung, bones or elsewhere. Wildbolz evaporates morning urine to 1:10, passes once or twice through a paper filter impregnated with 2 per cent. phenol, and then makes three sets of two injections on the arm, the two upper with 1:1,000 tuberculin; 3 or 4 cm. below this, two with 1:10,000 tuberculin, and, the same distance below, two with a minute amount of the 1:10 evaporated urine. The response with an active tuberculous process is the same with the urine as with the diluted tuberculin, but the tuberculin response persists unmodified after the process has healed, while the urine response fades out completely. A similar response was never obtained in the nontuberculous, not even in syphilis, influenza, etc., with the single exception that urine containing large amounts of staphylococci induced a reaction, so that the findings are not pathognomonic in certain cases of nephritis.

With this exception, this biologic reaction, he reiterates, may be depended on to reveal the tuberculous or nontuberculous nature of lesions, and will also disclose when they are healed. If the urine reaction persists after the clinical healing of the known process we can be confident that there is some other active process elsewhere.

The specific nature of the urine reaction is demonstrated still more conclusively by the fact that, after subsidence of the urine reaction, if an injection of 1:1,000 tuberculin is made nearby, the apparently extinct urine reaction flares up anew, the infiltration and redness becoming distinct again. This does not always occur, but it is frequent enough to testify to the specific nature of the urine reaction. He cites three cases of different types to show the reliability of the findings with this urine test. In one, a boy of 13, had for over a year what seemed to be a tuberculous process in the ankle region, rebellious to all treatment. The roentgen findings were negative, the process being apparently in the soft parts. The urine test was negative, and the operation finally revealed a wood splinter in the depths of the fistula. In another case the positive urine reaction was not heeded as the diagnosis otherwise was so obscure, but necropsy revealed the grave tuberculous process in the kidney. In another, the course confirmed the urine test which testified that the case was one of incipient pulmonary tuberculosis instead of the supposed stasis hemorrhages from the uncompensated heart defect. By comparing the urine response with the response to the tuberculin test, we can obtain better insight than ever before on whether treatment must be kept up or the patient can be regarded as clinically cured. He repeatedly obtained a negative urine reaction in women nephrectomized a year or a year and a half before on account of isolated tuberculous processes in that kidney. He has never yet noted this rapid subsidence of the urine reaction in men after nephrectomy for this cause, and he assumes this to prove that there is still some lingering tuberculous process, possibly in the prostate or seminal vesicles. If repeated urine tests fail to give a positive response, year after year, we may accept this as evidence that the tuberculosis has been radically cured. He warns that patients being treated with tuberculin may give misleading findings as the tuberculin passing into the urine might induce the reaction. Wildbolz is now engaged in research on intradermal injection of other body fluids, the serum, pleural and joint effusions and cerebrospinal fluid, and with the ophthalmoreaction with the milk of tuberculous cows. He is physician in chief of the Inselhospital at Berne.

Gazzetta degli Ospedali e delle Cliniche, Milan

June 8, 1919, **40**, No. 46

Influenza in 1918. E. Belliboni.—p. 438.

Policlinico, Rome

June 15, 1919, **26**, No. 24

*The Cerebrospinal Fluid during Malaria in Children. G. Genoese. —p. 737.
Echinococcus Cyst in Abdominal Wall. R. Vergano.—p. 750.
Influenza and Malaria. P. Castellani.—p. 751.

The Cerebrospinal Fluid During Malaria in Children.—Genoese reports the findings in the lumbar puncture fluid in ten cases of malaria in children. The fluid was found pathologic during the malarial attacks, the reaction to the meningeal irritation being both chemical, physical and cytologic. The albumin content is high but not to such a degree as in acute meningitis. There is usually more or less intense lymphocytosis and the chlorid content is increased, but this does not inevitably occur. In some of his cases the fluid was merely under high pressure, with high albumin content but no cells in the fluid, although the complete meningeal clinical picture was present. Rubino has reported (1914) a case in which a boy of 9 was taken suddenly with what seemed to be typical meningitis, fatal the twelfth day, with continuous high fever after four days in the hospital. The lumbar puncture fluid was clear but under high pressure, with 0.5 albumin and lymphocytosis. The necropsy revealed signs of pernicious malaria with hyperemia in the meninges. Genoese's experience has been that pathologic conditions are present when there is more than one lymphocyte per cubic millimeter. In another case a child of 2 began to have irregular fever, vomiting and diarrhea. There were no clear meningeal symptoms but the fluid was under high pressure and contained 0.5 per thousand albumin, 8.2 chlorids, and a moderate number of lymphocytes. The blood showed malarial parasites, and prompt recovery followed under quinin.

June 22, 1919, **26**, No. 25

*Spasmophilia in Children. T. Luzzatti.—p. 769.
Digitalis in Influenzal Pneumonia. D. Giannelli.—p. 788.
Paralysis Following Intragluteal Injection of Quinin. G. Sabatini. —p. 792.

Spasmophilia in Children.—Luzzatti in this review of present conceptions of spasmophilia emphasizes the difficulty at times of differential diagnosis of convulsions. Electric tests will usually decide whether they are of spasmophilic origin or not, but they cannot be relied on exclusively. One child with jacksonian convulsions developing suddenly presented the spasmophilic response to the electric tests, but the course of the case soon revealed tuberculous meningitis. In another case the diagnosis of meningitis was disproved by speedy recovery with signs of influenza. In both, there was evidently a substratum of spasmophilia. The latter affects principally young infants. He warns further that epilepsy in young children is generally atypical. Judging from the literature, children with spasmophilia often display a tendency to neuropathies and psychopathies as they grow up. Chloral by the rectum is the most rapid and harmless treatment during spasms, with sodium bromid and calcium bromid at other times, and cod liver oil with phosphorus. Hot baths, a cold douche to the chest and back, then putting the child in a warm bed and rubbing him, and stimulation of the skin or nasopharynx in other ways are among the measures suggested for respiratory spasm; chloroform, not being inhaled, is of little use. Regulation of the diet is of prime importance.

Riforma Medica, Naples

May 31, 1919, **35**, No. 22

*The Anergy Theory and the Predisposition to Infections. G. Galeotti. —p. 437.
*False Dextrocardia. C. Guarini.—p. 438.
*Osteomyelitis of the Jaw. B. De Vecchis.—p. 439.
Aortitis. O. Cantelli.—p. 440.
Peculiarities of Influenza in Istria. M. Gioseffi.—p. 444.
Protection for Pregnant Women and for Infants. G. Cristalli.—p. 452.

The State of Anergy or Predisposition to Infections.—Galeotti defines anergy as the inability of the organism to produce antibodies. This may be because an invading infectious germ may destroy the antibodies as fast as they are produced; or it may render the tissues incapable of producing them; or it may absorb the antibodies and thus render them useless. He includes in the term antibodies, opsonins and bacteriotropins, that is, all the defense reserves of the body, and urges research along the lines of these three hypotheses for better comprehension of the predisposition to infections. Influenza seems the most striking example of a condition of anergy produced by some unknown virus which throws down the barriers against invasion by any germs which happen to be on hand.

False Dextrocardia.—Sclerosis of the lung with retraction of the entire mediastinum from pleural adhesions induced apparent dextrocardia in Guarini's case.

Osteomyelitis of the Jaw.—De Vecchis emphasizes that in every acute and subacute affection in the neck or face, the possibility of the origin in a dental lesion must be borne in mind.

Brazil-Medico, Rio de Janeiro

Sept. 14, 1918, **32**, No. 37

Helminthology of Southern Brazil. IV. L. Travassos.—p. 289.
Forked Thumb. A. F. de Magalhães.—p. 290.

May 17, 1919, **33**, No. 20

*Treatment of Chronic Constipation. A. da Silva Mello.—p. 153.

Treatment of Chronic Constipation.—Mello reports that his experience with Rosenfeld's method of treating habitual constipation with an antidiarrheic diet was not favorable. (Rosenfeld's article on the subject was summarized in THE

Journal, Jan. 23, 1915, p. 376.) Mello remarks that Rosenfeld's success in his cases was probably due to the fact that he happened on a series of cases of psychic, hypotonic and rectal constipation or mild degrees of spastic constipation, all of which are likely to yield readily to almost any treatment. Mello's cases were the graver forms, with irritation of the intestine, and the antidiarrhea diet is directly contraindicated. He refers disparagingly also to Kellogg's article in The Journal, June 30, 1917, saying that no method of treatment can be applied indiscriminately to all cases of constipation. Kellogg's system is the exact opposite of Rosenfeld's, and yet, Mello remarks, each writer makes much the same claims of constant success.

Gaceta Médica de Caracas

April 15, 1919, **26**, No. 7

*Vitamins and Symbiotes. F. A. Risquez.—p. 69. Concluded in No. 8, p. 82.
*Relapsing Fever in Venezuela. E. Tejera T.—p. 72.

The Question of Deficiency Diseases.—In the discussion that followed Risquez' paper on vitamins and symbiotes, Razetti said that beriberi did not exist in Venezuela until it appeared in Guiana. It had been imported from Brazil, and it is now spreading through the country, from the south northward, and will undoubtedly reach Caracas in time. The populace in Venezuela are living with the same customs and the same food now as a century ago. How can this invasion of the country be reconciled with the assumption that beriberi is a diet-deficiency disease? Ayala stated that beriberi had been unknown in his region in past epochs but comparatively recently it has invaded the extensive region of the llanos and reached Del Tuy although there has been no change in the food of the inhabitants. Machado emphasized that polyneuritis is not inevitably beriberi, and that polyneuritis may be due to a number of causes. He had an epidemic of fifteen cases of polyneuritis in a garrison many years ago, but the ration never included rice. The fifteen men were sent to camp out, a mile or so away, and all promptly recovered, although the food supplied was the same. The general opinion of the meeting seemed to be in favor of an infectious element in beriberi.

Relapsing Fever.—Tejera has had two cases of relapsing fever in persons from Trujillo, and he found that a certain tick which abounds there is capable of infecting rats with spirochetes which seem to be identical with the parasites found in the blood in relapsing fever.

Medicina Ibera, Madrid

May 24, 1919, **7**, No. 81

*Albuminuria after Operations on the Nose. D. J. M. Barajas y de Vilches.—p. 141.
Parenteral Injections of Milk in Treatment of Certain Eye Affections. B. C. Duran.—p. 143. Cont'n.
Induced Pneumothorax to Arrest Hemorrhage. E. Hervada.—p. 145.

Albuminuria After Operations on the Nose.—Barajas was recently called in consultation in a case in which after turbinectomy diffuse edema developed, from head to feet, with intense albuminuria. This latter gave the clue as he had encountered a number of cases in which albuminuria followed cauterizing or operating on the nose. It is evidently a reflex action, and soon subsided. He theorizes to explain the course of the reflex by way of the pituitary and medulla oblongata.

Prensa Médica Argentina, Buenos Aires

May 10, 1919, **5**, No. 34

*Partial Meteorism Simulating Gallstone Colic. C. B. Udaondo.—p. 333.
Opening Lecture in Dermatology Course. M. Aberastury.—p. 334.
*The Arrhythmias. P. M. Barlaro.—p. 337.
*Tuberculous Pericolitis in Syphilitic. P. M. Barlaro.—p. 340.

Partial Meteorism Simulating Gallstone Colic.—Udaondo's patients were two women who for two or three years had been having intermittent violent pain in the right hypochondrium, radiating to the back and lasting for fifteen or thirty minutes. The pain was as intense as mild gallstone colic, and the location was the same, but the pains always terminated with diffuse abdominal pain and an imperious movement of the bowels. Radioscopy demonstrated accumulation of gases in the colon, especially at the angle nearest the liver. This pressed on the liver and elicited the intense pains. In one of the women bradycardia, attenuation of the corneal reflexes and spastic constipation revealed a tendency to vagotony. Under atropin and strontium bromid, with complete change from starch food to a predominantly albuminoid diet, the symptoms all subsided. Small doses of castor oil were also given daily at first.

Arrhythmias.—Barlaro here inaugurates a series of articles on arrhythmias. This one is accompanied with nineteen illustrations in the text.

Constipation from Pericolitis.—Barlaro reports the case of a syphilitic young woman with a tuberculous pericolic lesion which entailed constipation and recurring pains. The laparotomy showed the colon covered with membranes which were easily detached. Mercury and tuberculin were then given on alternate days and the young woman has been in good health since.

Progresos de la Clínica, Madrid

April, 1919, **7**, No. 76

*Plastic Surgery of the Face. A. Cortés Lladó.—p. 129.
*Mineral Waters in Disease of the Digestive System. B. B. Campos. —p. 147.

Plastic Surgery of the Face.—In this third and profusely illustrated article, Lladó discusses reconstruction of the entire nose, of the lip, cheek, and chin, with extensive bibliography, including some recent theses on maxillofacial surgery.

Mineral Waters in Treatment of Chronic Digestive Disturbances.—In this second article by Campos, he classifies the various diseases of the digestive apparatus according to the indications for different types of mineral waters. He warns in conclusion that the use at home of mineral table waters may be dangerous, as they are usually taken without medical supervision or advice. Some persons take a certain mineral table water regularly for years. Even although it may have been advised by a physician to start with, conditions may have altered since so that the special mineral water used may be directly contraindicated. Mineral waters, he reiterates in conclusion, should never be regarded as beverages but as medicines, and their use at the spa or in the home should always be for reasonable indications. Although bottled water loses some of its radioactive and other power, yet it resembles the water as it comes from the spring closely enough for the indications for it to be practically the same.

Even when all indications and method of taking are correct, the water cannot be kept up indefinitely without risk of modifying the blood pressure, injuring the kidneys, and favoring production of calculi. Morbid processes, besides, are usually progressing or retrogressing, so that what may be useful in one phase may be directly harmful in another phase. For example, carbonated waters may give relief in cases of deficient secretion of gastric juice, as they stimulate the secretory function. But this action is directly injurious with hyperchlorhydria, whipping up the already excessive secretory function. He adds that 75 per cent. of those in Spain who suffer from stomach disturbances have hyperchlorhydria. Injury is also liable with dilatation of the stomach as the carbonated waters increase the distension. Another prevalent and injurious custom is to take a strong alkaline mineral water with the meal. This neutralizes the gastric juice and impedes digestion. Mixed with wine, the alkali in the water forms new compounds with the tartaric and other acids in the wine, and the mineral water ceases to be alkaline, while the alcohol content of the wine is not modified by the new chemical compound. Weakly mineralized waters are the true table waters where pure drinking water is not available or where the drinking water has no lime. Also for persons who are becoming demineralized, as in tuberculosis, rachitis, scrofula and pregnancy. Mixed with wine, they form a sodium tartrate which, being laxative, counteracts the astringent action of lime. On the other hand, persons inclined to gout, to gallstones and urinary stones should refrain from waters with mineral content, and use mostly distilled water. He gives a classified list of Spanish mineral waters to meet the various indications.

Revista Española de Medicina y Cirugía, Madrid

May, 1919, **2**, No. 11

*Surgery at the National Medical Congress. A. Esquerdo.—p. 242.
Bacteriology and Influenza Id. J. Peset.—p. 244.
*Radium and its Applications. Mme. Curie.—p. 254.
Influence of War Surgery on Surgery in General. R. dos Santos.—p. 256.
The Mineral Waters of Spain. F. Tous Biaggi.—p. 294.

Surgery at the Madrid Congress.—This entire number of the *Revista* is devoted to this national medical gathering, the first of its kind in Spain. It was described in the Madrid Letter, page 207. The borderland subject of gastric ulcer elicited an especially lively discussion between internists and surgeons, as also radiologic treatment of uterine cancer.

Radium and Its Applications.—Mme. Curie described the three classes of rays discharged by radium and their action on the tissues. She prophesied that emanations would in time be used altogether, instead of radium itself, in treatment of malignant tumors, microbian and toxic lesions, roentgen-ray burns, etc., and for injections, and also in the form of natural mineral waters. Mme. Curie closed her address with lantern slides showing the primitive laboratory in a wooden building where she and her husband made the wonderful discovery of radium. It will be remembered that she has twice been the recipient of a Nobel prize; in 1903 with her husband (the physics prize), and 1911 to herself alone (the prize in chemistry).

Revista Española de Obstet. y Ginecología, Madrid

January, 1919, **4**, No. 37

*Case of Pubiotomy. D. Agusti Planell.—p. 9.

Pubiotomy.—In Planell's case the severed pubic bone had to be stretched apart for a distance of 6 cm. to permit extraction of the living child at term, weighing 3,325 gm. There was no apparent injury from this and the episiotomy except a slight laceration in the lower portion of the anterior vaginal wall. He always delivers the child at once, and the comparatively easy and rapid delivery in this extreme case teaches anew, he declares, the superiority of pubiotomy over cesarean section in certain conditions which he defines in detail.

February, 1919, **4**, No. 38

*Acute Ileus of Gynecologic Origin. Vital Aza.—p. 49.
*Pregnancy after Roentgen Modification of Uterus. V. Conill.—p. 56.

Acute Ileus of Gynecologic Origin.—In Aza's case the large left ovarian cyst had such a long pedicle that the cyst had crossed to the other side of the abdomen, dropping into the right iliac fossa, while its pedicle passed over a sagging loop of the transverse colon and had strangulated the latter.

Pregnancy After Roentgen Treatment of Metritis.—The woman of 40 had been married at 17 and had had the uterus curetted at 25 for menstrual irregularities. The irregularities had persisted and at 40 the menorrhagias were so severe that roentgen treatment was commenced. The uterus was very large, reaching above the umbilicus, apparently the seat of diffuse fibromatosis or metritis with sclerosis. Four sittings were given, but the course then was interrupted by the epidemic of influenza, and when the woman returned again she was pregnant. She gave birth to a healthy child eleven months after the treatment had been begun. It was the first child after twenty-three years of sterile marriage. Conill theorizes that the succulent, swollen lining of the uterus had impeded conception before.

March, 1919, **4**, No. 39

*Puerperal Embolism. A. Franco.—p. 97.
Derodymus Monster. V. Lobo.—p. 99.
*Contracted Pelvis. Garcia-Casal.—p. 101.
*Treatment of Cancer. E. Ribas y Ribas.—p. 105. Commenced in No. 37.—p. 13.

Puerperal Embolism.—Franco discusses the factors which promote embolism, such as local interference with the circulation, the arteries working harder than usual, the veins suffering from pressure, etc. In addition to extreme care in warding off or correcting all such factors, he seeks to reduce the coagulating tendency of the blood by giving sodium citrate, and has found this a valuable aid in treatment of phlebitis and embolism. He gives an intravenous injection of 200 gm. of a 5 per thousand solution of the sodium citrate in physiologic saline; if there is insufficiency on the part of the kidneys he uses distilled water instead of the saline. He repeats the injection daily for three days and after this on alternate days if it has to be kept up longer. The blood pressure rises, with diuresis, a chill and slight transient fever. He sometimes withdraws 300 gm. of blood beforehand. This treatment was a brilliant success in the two cases in which he has applied it. Later he read that sodium citrate was being given by the vein in cases of war wounds to aid in warding off phlebitis and thrombosis.

Contracted Pelvis.—García-Casal had planned to apply pubiotomy in the case described in which the pelvis was extremely contracted and deformed from rachitis and scoliosis. But owing to the unusually small size of the child it was delivered spontaneously in ten hours under expectant treatment.

Cancer.—Ribas emphasizes the existence of a precancer stage and the necessity for its early recognition. The blood with cancer shows acidosis, leukocytosis, high antitryptic and hemolytic power and reduction of the glycolytic ferment. He notes further that certain individuals are refractory to cancer, while certain families seem to display a hereditary predisposition to malignant disease although the hereditary transmission of cancer itself is denied by most authorities. In treatment of cancer he urges surgical intervention at the earliest possible moment but adds that remarkable cures have been realized with the roentgen rays and radium, also with vaccines or emulsions and autolysates. They might be supplemented with organotherapy when there is reason to assume liver insufficiency or endocrine upset.

Revista Médica de Chile, Santiago

February-March, 1919, **47**, No. 2-3

*Acidosis and Surgery. A. Wall.—p. 55.
Spasm of Shoulder and Face Muscles. E. Malbran.—p. 59.
*Gonococcus Peritonitis. L. Vargas Salcedo.—p. 63.
*Trachoma in Chile. J. Thierry.—p. 70.

Acidosis and Surgery.—Wall reports some cases in which symptoms caused by acidosis were mistakenly ascribed to some supposed tumor casually discovered, or to the appendix. Operative treatment for the assumed tumor had no effect on the acidosis, the actual cause of the symptoms, except possibly to aggravate it. The surgeon may never learn of his blunder as when the symptoms persist or return the patient has no further use for the surgeon and hence does not return to him. In one case recently a young woman had been having general malaise for three or four days, intense headache, vomiting, and pain in the hypogastrium and right iliac fossa. The tenderness was diffuse and included part of the hypogastrium. This was her first alarming attack, but for some years there had been periods of diarrhea alternating with constipation. Called in consultation, Wall doubted the diagnosis of appendicitis that had been made, and called for examination of the urine for acetone. The acetone reaction was intense and the reaction for diacetic acid was positive. Under treatment of the acidosis with sodium bicarbonate by the mouth and rectum, the whole clinical picture rapidly subsided. If appendicectomy had been done as proposed, the general anesthesia might have brought on fatal coma. He emphasizes that acidosis does not signify exclusively retention of acetone bodies. The essential element in it is the depletion of the alkali reserve in the blood. Starvation acidosis must be counteracted, and he makes a practice of combating postanesthetic disturbances by giving the alkali by the rectum and even by the vein. The results have been most gratifying in his long experience with this. In another case reported, a myoma in the uterus casually discovered was accepted as the cause of the symptoms, explained later as acidosis by examination of the urine. Tenderness from ovaritis contributed to mislead the physician to ascribe the whole trouble to the tumor. Of course acidosis does not exclude a possible surgical affection, but the possibility of acidosis should always be borne in mind.

Gonococcus Peritonitis.—Salcedo relates that the onset of gonococcus peritonitis does not differ from that of any diffuse

peritonitis, but the general condition keeps more favorable than with peritonitis of other origin; there is not so much vomiting or tympanism, the tongue is moist and the septicemia seems to be mild. The laparotomy shows that the primary focus is in the tube or ovary or both. The secretions do not have the usual fecaloid odor. He advocates operating at once, and reports two cases from his large experience. In one fatal case the gonococcus and streptococcus were associated, and the toxemia was intense.

Trachoma.—Thierry reviews his 136 cases of trachoma during twenty years of practice at Valparaiso. Trachoma is evidently becoming more prevalent, mostly imported cases. He urges stricter measures against its introduction into the country, saying that every thousand dollars spent now for this purpose represents the saving of a million later.

Revista de Medicina y Cirujía, Caracas

April, 1919, **2**, No. 13

*Drainage of Seminal Vesicles. J. C. R. Morales.—p. 265.
Dietetic and Medical Treatment of Bladder Calculi. A. Benchetrit. —p. 273.
*Hookworm Disease in Venezuela. J. B. Ascanio-Rodriguez.—p. 282.
Peforation of Velum by Larvae of Fly. A. Pietri.—p. 288.

Drainage of Seminal Vesicles.—Morales explains how infectious processes in the seminal vesicles are liable to entail retention of secretions and of pus, and the necessity for evacuating them. He urges practicing the procedure on the cadaver, and expatiates on the fine results likely to be realized when this focus of insidious infection is cleared out. The best results are realized in cases with joint lesions; he reports that 76 per cent. have been cured in this rheumatic group and 23 per cent. much improved. In the group with local suppuration, 61 per cent. have been cured and 23 per cent. improved, but no benefit was apparent in 14 per cent. In the group in which pain was the main symptom, 66 per cent. were cured and 25 per cent. improved. In fully 25 per cent. in this group calculi contributed to the clinical picture. In the pus cases the suppuration usually involves the prostate and neck of the bladder. A radical cure can be anticipated only by resection of the vesicles and the prostate. Morales warns that the state of the sexual functions should be determined before any action on the seminal vesicles. Otherwise the physician might be held responsible for any preexisting abnormal conditions. In about 10 per cent. there is postoperative impotence, but this is transient. Chronic spermatocystitis generally modifies the sexual functions. He describes in detail the Fuller and Squier methods for evacuating the seminal vesicles, saying that the former is generally regarded as difficult and dangerous.

Hookworm in Venezuela.—Rodriguez lists the numerous places where his patients had acquired hookworm, showing that practically the whole country is infested.

Revista de Medicina y Cirugía, Havana

June 25, 1919, **24**, No. 12

*Exencephalous Monster. R. Fernández Valenzuela.—p. 319.
*Seat of Sensations of Hunger and Thirst. J. F. Arteaga.—p. 327. Commenced in No. 11, p. 289.

Exencephalous Monster.—Valenzuela gives an illustrated description of a typical instance of this form of monstrosity. She accepts some anomaly in the amnios as probably responsible for the malformation.

Seat of Hunger and Thirst.—This is the article which won the Gordon y Acosta prize for Arteaga. He discusses whether in the present status of our knowledge it is possible to determine the seat of the sensations of hunger and thirst, replying to his question in the affirmative. He explains that hunger and thirst are phenomena common to the cells of every living being as manifestations of the lack of chemical elements indispensable for the life of the cells. These trophic sensibilities of the cells may be unconscious in the lower animals but they become conscious phenomena as the nervous system of vertebrates becomes more highly developed. In man, hunger is manifested by painful contractions of the stomach, and thirst by dryness of the mouth and throat. These phenomena are purely reflex, the principal centers for hunger and thirst being in the medulla oblongata, but Auerbach's plexus is also involved, especially in relation to hunger. He discusses in detail the phenomena from lack of lime, etc., in man, animals and birds, and the way in which amphibious animals change their diet as they live in water or air.

Revista de Psiquiatría, Lima

April, 1919, **1**, No. 4

*National Problems of Mental Health. H. F. Delgado.—p. 203.
Paraplegia of Traumatic Origin. E. Odriozola.—p. 214.
*Question of Survival. L. Avendaño.—p. 220.
Medicolegal Course. O. M. Quesada.—p. 226.
Disability from Chronic Paranoia. H. Valdizan.—p. 237.

Psychopedagogics.—Delgado discusses the inadequacy of the care of the insane in Peru, there being only one asylum, and this has accommodations for only a tenth or twentieth of the insane throughout the country needing institutional care. As an aid in building up a more rational care of the mentally deranged and, above all, for prophylaxis of mental derangement he, with Valdizan, has organized a four months' course for school teachers and others on the psychology, psychiatry, and hygiene of the child, neuropathology of the school, and the Montessori method.

Question of Survival.—A man and wife had been assassinated at night. The woman had been stabbed at twenty-three points while the man had been stunned and killed with heavy blows with a club. The assassin would not have ventured to attack the man in this way, Avendaño concludes, if the wife had not been already dead before the husband came in.

Semana Médica, Buenos Aires

May 15, 1919, **26**, No. 20

Proposed Medical Curriculum. G. A. Alfaro.—p. 503.
Pin in Child's Appendix. R. A. Rivarola and A. Sein.—p. 506.
*Ferrán's Conception of Tuberculosis and Vaccine Prophylaxis. M. R. Castroman.—p. 507.
*Syphilomania. C. F. Gandolfo.—p. 522.
Urine as Antigen in the Wassermann Reaction. J. Bacigalupo.—p. 523.
*Typhus. G. Giacobini.—p. 529.
*Determination of Acetone in the Urine. P. B. Guggiari and G. M. Crovato.—p. 532.

Vaccination in Prophylaxis of Tuberculosis.—Ferrán's conception of the tubercle bacillus as only the third phase in the life of the micro-organism responsible for tuberculosis has been already described in these columns. His later research has confirmed him more and more in his views and in the efficacy of vaccination based on them. The first stage of the micro-organism he calls the alpha stage. The bacillus then is merely an ordinary nontoxic saprophyte, but under certain conditions it induces phlegmasia and even galloping consumption but without tubercle production and without true tubercle bacilli. The second stage of the micro-organism corresponds to Much's granules, and the third stage is the true tubercle bacillus. The importance of this conception lies in the fact that by a vaccine prepared against the first phase, the nonacid resisting alpha bacillus, the system is immunized against it and thus the whole chain is broken up and it does not progress to the other stages. It is easy to cure this phase of pretuberculosis by the alpha bacillus vaccine, but once the second or third phase is reached and the true tubercle bacillus installed, vaccine treatment is impotent. Castroman reiterates that the hopes based on tuberculin treatment of this phase have not been realized in practice.

Syphilomania.—Gandolfo reiterates that every person benefited by the salicylates is not inevitably rheumatic, and every person that improves under mercury is not necessarily syphilitic, as so many seem to think now. Syphilis is diagnosed at every turn, no matter what the history may be. He is convinced that we are passing now through a period of syphilomania.

Typhus.—Giacobini relates that in infants typhus appears with an itching eruption, with phlyctenosis. The eruption subsides after the first few days in the grave cases. In older children and in adults, the eruption is of the petechial type. Another characteristic feature of the disease is the edema in the brain, and this is responsible for the cerebral disturbances

and is directly connected with the skin lesions, as the skin and brain are formed from the ectoderm. The cerebral symptoms or the skin symptoms may predominate; with the former he gives hot baths to induce revulsion to the skin, seeking to imitate the natural eruption revulsion. He has observed a complication of typhus not mentioned in the textbooks; this is a hemorrhagic process in the peritoneum at about the eighth day. This peritoneorrhagia with thready pulse, he says, calls for ice to the abdomen and deep injections of ether, under the rigid abdominal wall, injecting daily 3 or 4 c.c. of ether. This aids in the resolution of the process, sterilizes, and wards off the otherwise almost inevitable purulent peritonitis. He repeated these injections daily for ten and fifteen days and the cerebral symptoms and the general condition rapidly improved. In conclusion he reaffirms the importance of the principle of relieving congestions and edema in the brain by inducing or promoting the eruption.

Acetone in the Urine.—Guggiari and Crovato have modified the Imbert technic, as they describe, and commend their modification as superior to it for determination of the acetone in the urine.

Siglo Médico, Madrid

May 31, 1919, **66**, No. 3416

*Roentgen Treatment of Hypertrophied Prostate. B. N. Cánovas.—p. 433.
*Strabismus. B. Castresana.—p. 434. To be cont'd.
Nevi. Sicilia.—p. 439.

Roentgen Treatment of Hypertrophied Prostate.—Cánovas emphasizes that benefit from roentgen exposures can be counted on only when the hypertrophy is of the glandular type of tissue. This may retrogress under the influence of large doses of hard rays. Notable improvement of all the symptoms for from six months to a year to date followed the roentgen treatment in his cases of this adenomatous group. He urges a tentative course of roentgen treatment in every case before operating on an enlarged prostate. The best results may be anticipated when the tissues are most sensitive to the rays, but this imposes extra caution as acute retention may follow too large a dose of the rays. More than a year has elapsed in four of his ten cases and the previous frequent attacks of retention have not returned. In one case the discovery of polyps called for operative measures. The pain disappeared in another case and the tenesmus, but one diabetic with bilateral hernia has not shown any benefit. The outcome is not known in another case. Cánovas does not give any details as to his technic, but he warns in conclusion that "catching cold," constipation and indigestible food are liable to aggravate conditions with an enlarged prostate.

Operative Correction of Squint.—Castresana resects the muscle and passes three sutures underneath the stumps, through the sclera and through the conjunctiva at each side of the wide crescentic gap cut in the conjunctiva. The central suture is horizontal but the two others curve outward, thus embracing more fibers of the sclera. As the threads are drawn up, this indirect advancement of the muscle corrects the deviation of the eye, and the stout adhesions which form render the correction permanent. The ends of the threads are fastened to the skin with plaster. The antagonist muscle can also be stretched through a linear incision. He emphasizes that the outline of the sutures taken in this way is that of a rhomboid, with the horizontal diameter longer than the vertical. The results have been extremely gratifying in the eighty cases in which he has applied this technic since 1915. As a rule he calculates resection of 2.5 mm. of muscle for 10 degrees of deviation. A number of cases are illustrated and the article is to be continued.

June 7, 1919, **66**, No. 3417

*Tabes and General Paresis. E. F. Sanz.—p. 453.

Tabes and General Paresis.—Sanz regards as valuable innovations in treatment of syphilis of the nervous system the adoption of mercuric cyanid, and its administration by the vein as also arsphenamin, supplemented by intraspinal infusion of arsphenaminized spinal fluid. The indications differ with tabes and general paralysis only in that the intravenous treatment alone may suffice for the latter, but tabes is rebellious to intravenous treatment alone. He protests against an inevitably pessimistic attitude in syphilis of the nervous system. Although a complete cure is out of the question, yet the clinical picture can be materially softened, especially when the diagnosis is made early. The progress of science has facilitated this with tabes, but we are not certain with general paresis.

June 14, 1919, **66**, No. 3418

*Influence of the Prostate on Bladder Infections. P. Cifuentes.—p. 473.
Influenza. C. M. González.—p. 477.

Influence of the Prostate on Bladder Infections.—Cifuentes comments on cases in which cystitis was induced and kept up by an infectious process in the prostate. He reports in detail a case for which the colon bacillus alone seemed responsible, and in which the shadow of a phlebolith led to the mistaken assumption that a bladder stone was the cause of the bladder disturbances. The cystitis had flared up anew whenever the man "caught cold" or got chilled.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

April 26, 1919, **1**, No. 17

*"Miracles" in Medicine. W. Nolen.—p. 1468.
The Bacteriology of Influenza Pneumonia. I. Snapper and L. K. Wolff.—p. 1483.
*Oil Dermatitis. D. Brocx.—p. 1488.
Lethargic Encephalitis in Adult. D. J. Beck.—p. 1494.

Miracles of Healing.—This was the presidential address delivered at the recent annual meeting of the Netherlands Medical Association. Nolen described in detail the case of a woman of 44 totally helpless from paralysis for ten months, which had developed gradually during the preceding three years. During several months' stay at a sanatorium she regained the use of her legs, but they became paralyzed again on return home. She had to be fed, and turned in bed, but had no fever. Nolen then passively exercised her joints and made her sit up in bed, making her continue this spontaneously, and improvement speedily progressed to complete recovery. He relates that he has had a number of such "miracles of healing," and compares them with similar miracles of healing on record through the ages. He emphasizes that these miraculous cures are not the work of supernatural, magic forces but of psychic measures within the reach of every one, but not to be picked up without effort. Of course there are some people so easily impressed and unreflecting that they respond to even the most blatant quack advertisements. But most sick persons do not want to have anything to do with quacks, and they place their confidence in regularly qualified physicians. The psychic measures which these patients require must be taught, must be studied over, thought out and adapted to the special case. One inconsiderate word may spoil everything. In the medical course the diseased mind is well studied, but nothing is taught of the workings of the normal mind. What would we think of a farmer sowing the seed for his crops without any knowledge of the conditions and nature of the soil! Body and mind are closely bound together and exert a constant interaction on each other, and the study of "miracles of healing" contains many a useful lesson for us.

Oil Acne.—Brocx comments on the wide prevalence of acne, furuncles, pruritus, etc., in persons working in oils. He found reducing substances in the urine of four persons thus affected. This suggests that deficiencies in the diet may be the determining factor, an endogenous factor cooperating with the oil.

Hygiea, Stockholm

May 16, 1919, **81**, No. 9

*Treatment of Oxyuriasis. H. Kjerrulf.—p. 401.
*Influence of the School on the Spread of Influenza. E. Zander.—p. 415.

Treatment of Oxyuriasis.—Kjerrulf comments on the wide distribution of oxyuris in all countries and in all classes, and relates experiences which demonstrate the inefficacy of tanacetum and other remedies which have outlived their vogue.

He has been most successful with basic aluminum acetate, 1 gm. three times a day, given with a purgative of senna, sulphur and compound licorice powder, administered for three or four days. To ward off reinfection, the anus is smeared with a salve containing 1 part thymol to 2 parts each of camphor and quinin sulphate in 30 parts lard. He has been using this combined treatment for eight years.

The School and the Spread of Influenza.—Comparison of the curve of influenza in and outside of a large school at Stockholm showed that the school morbidity closely paralleled the general morbidity. The figures seem to demonstrate further that influenza is not contagious during the first day. Consequently if children taken sick are sent home at once there is no need to close the school.

May 31, 1919, **81**, No. 10

*Roentgen Study of the Duodenum. A. Akerlund.—p. 449.

Duodenal Ulcer.—Akerlund comments on the local spasm that may be induced by duodenal ulcer, and on the distant spasm which it may induce in the body of the stomach. The local spasm at the site of the ulcer explains some of the symptoms with duodenal ulcer. It occurs as often as spasmodic contraction of the stomach with gastric ulcer. A roentgenogram showing local constricting spasm in the bulbus of the duodenum, accompanied by local tenderness, is convincing proof of duodenal ulcer, he thinks. This spasm causes a characteristic scalloped outline in the roentgen shadow of the upper duodenum; there seems to be always a round protruding bunch which represents the ulcer itself, the spasm nearly closing the lumen of the duodenum just above and below this knob shadow. The pylorus is generally wide open. This spasm of the region of the duodenal ulcer explains the initial hypermotility and the "paradoxic" four hours' retention, the spasm coming on gradually as digestion progresses, after the hypermotility at first.

The remote spasm in the stomach with duodenal ulcer may occur with quite normal conditions in the stomach. With roentgenoscopy he has witnessed this spasmodic contraction of the middle of the greater curvature of the stomach develop under his eyes when pressure was applied to the tender duodenal ulcer. This is a very important aid in the diagnosis of duodenal ulcer. He describes three cases of simultaneous gastric and duodenal ulcer, verified by operation in one case. The others are doing well under internal measures alone. He gives the roentgen findings also in some cases with a diverticulum in the duodenum. In one case it was associated with chronic pancreatitis. In another case a diverticulum near the duodenojejunal flexure was seen filled with air at first and later with the contrast suspension, when the patient lay prone for an hour while the stomach was emptying itself. The diverticulum seemed to belong to the stomach but was not found at the laparotomy. The necropsy disclosed it extending up back of the pancreas. Goldammer has recently published a similar case. De Quervain and others have explained such findings as a functional spastic diverticulum production in the stomach, but Akerlund is convinced that the diverticulum in such cases is an organic formation but originating, not in the stomach, but at the duodenojejunal flexure. The roentgen shadow seems to locate it in the stomach, but this is only a mistaken interpretation of the roentgenogram. Akerlund's case and Goldammer's case were identical apparently with de Quervain's and Schlesinger's four cases and, as in them, the diverticulum could not be found at the laparotomy.

Norsk Magazin for Lægevidenskaben, Christiania

June, 1919, **80**, No. 6

*Polydactylous Families in Norway. K. Bonnevie.—p. 601.
*Vagus Neuroses after Influenza. E. Gundersen.—p. 633.
Influenzal Eruption. T. Seip.—p. 640.
Proposed Legislation on Tuberculosis. N. Heitmann.—p. 643.

Polydactylous Families.—Bonnevie has found in a certain district in Norway a number of families with a supernumerary little finger, perfect or rudimentary, on the right hand and sometimes on both hands. Four or five generations of the different families are known to present these finger anomalies more or less frequently. Intermarriage between the different families shows that all of them trace back to one common ancestor, about 1660, who presented the finger anomaly in a pronounced form. Forty of his descendants in the six different families are known to have been polydactylous, and not all the members of the families were examined. The polydactylism is shown in these families to be a primary dominant character, although checked in its development in some. There is no evidence of a weakening of the anomaly through succeeding generations. Examination of two apparently normal members transmitting the anomaly to their children, revealed a rudimentary knob at the base of the little finger. The University of Christiania has founded an Institute for Research on Heredity, and this is its first official communication.

Vagus Neuroses After Influenza.—Gundersen remarks that the clinical picture of vagus affections has been built up on theoretical premises rather than on study of the patients themselves. He does not know of any published cases of functional vagus affections or vagus neurosis like the case he describes here in a medical student. After an apparently mild attack of influenza, he developed attacks daily, lasting an hour or less, and coming on suddenly with intense pain in the heart region. The pain spread to the left shoulder and he felt as if his heart stood still and then beat slowly and faintly. There was also pain in the stomach, and the left part of the epigastrium protruded until the close of the attack. The physician called at the first attack diagnosed hysteria. Similar attacks followed on succeeding days. The pulse dropped suddenly from 70 to 55, and vision seemed impaired, and there was difficulty in breathing, and polyuria followed the attack. The clinical picture thus included bradycardia and pain in the heart, local meteorism from intestinal spasm, spasm in the pharynx and bladder (polyuria), and eye phenomena probably from spasm in the ocular muscles. The young man was given bromids and atropin after these attacks had been returning daily for two weeks, and they subsided permanently. By exclusion, Gundersen diagnoses the case as allied to anaphylaxis, the vagus neurosis being a manifestation of autointoxication.

Ugeskrift for Læger, Copenhagen

June 12, 1919, **81**, No. 24

Influenza in Danish Sanatorium. I. C. Rahbek.—p. 973.
Danish Case of Echinococcus Disease of the Liver. S. Felding and Kelsted.—p. 980.

June 19, 1919, **81**, No. 25

*Isolation Period for Scarlet Fever. V. Bie.—p. 1011.

Isolation Period for Scarlet Fever.—Bie remarks that authorities differ in regard to the length of time scarlet fever convalescents must be kept isolated. Some say to four, others up to eight weeks. He analyzes the experiences at the Blegdamshospital where the isolation period has been gradually shortened more and more. No effect on the incidence of the disease in the town could be detected when the scarlet fever patients were discharged the thirty-eighth day. The large number of scarlet fever patients, 3,175, and the nearly three years' experience seem to justify acceptance of the conclusions that thirty-eight days is a long enough period of isolation. Sørensen with 10,299 patients in ten years and an isolation period of fifty-six days, had 3.6 per cent. return cases, while Bie had only 1.9 per cent. with his thirty-eight day period. Sørensen's percentage varied very little from year to year while Bie's percentage showed a constant downward trend, from 2.3 to 1 per cent. This testified that the shortening of the isolation period had not contributed to spread the disease; return cases and complicating nephritis were no more frequent, and it is possible that the period might be shortened to thirty-five days. He pays great attention to the nose and throat before discharging the patients, heeding this more than desquamation. One child was kept in the hospital for sixty-four days as the nasopharynx still showed pathologic conditions kept up by adenoids. When finally allowed to go home, the sixty-fourth day, the child's sister became infected and was brought to the hospital the sixth day.